



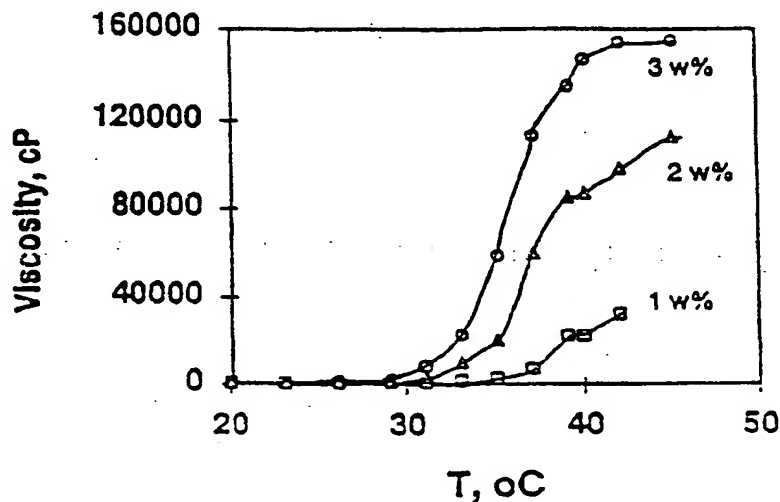
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(54) Title: COMPOSITIONS FOR COSMETIC APPLICATIONS

## (57) Abstract

A cosmetic composition is described having a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.



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## COMPOSITIONS FOR COSMETIC APPLICATIONS

This application is a continuation-in-part application of copending application  
5 U.S.S.N. 60/034,805 filed January 2, 1997, and entitled "Responsive Polymer  
Networks and Methods of Their Use", which is a continuation-in-part application of  
copending application PCT/US96/10376 filed June 14, 1996, designating the United  
States, and entitled "Responsive Polymer Networks and Methods of Their Use", which  
is a continuation-in-part application of copending application U.S.S.N. 08/580,986 filed  
10 January 3, 1996, and entitled "Responsive Polymer Networks and Methods of Their  
Use", each of which is incorporated entirely by reference.

### Field of the Invention

The present invention relates to a cosmetic composition useful in a variety of  
15 topical and personal care products, including treatments of disorders and imperfections  
of the skin or other areas of the body. More particularly, the present invention is  
directed to a cosmetic composition comprising a poloxamer:poly(acrylic acid)  
polymer network that can be designed to reversibly gel over a wide range of  
conditions to provide a composition having a controllable range of viscosities, making  
20 it useful in a variety of cosmetic and personal care applications.

### Background of the Invention

Many examples are known of cosmetic compositions intended for treatment of  
the skin or elsewhere on the body, where it is desired to have certain properties of  
25 viscosity. Hydrogels, such as cellulose, have been included as thickeners in cosmetic  
compositions. A hydrogel is a polymer network which absorbs a large quantity of  
water without the polymer dissolving in water. The hydrophilic areas of the polymer  
chain absorb water and form a gel region. The extent of gelation depends upon the  
volume of the solution which the gel region occupies.

30 Reversibly gelling solutions are known in which the solution viscosity increases

and decreases with an increase and decrease in temperature, respectively. Such reversibly gelling systems are useful wherever it is desirable to handle a material in a fluid state, but performance is preferably in a gelled or more viscous state.

A known material with these properties is a thermal setting gel using block copolymer polyols, available commercially as Pluronic® polyols (BASF, Ludwigshafen, Germany), which is described in U.S. Patent No. 4,188,373. Adjusting the concentration of the polymer gives the desired liquid-gel transition. However, concentrations of the polyol polymer of at least 18-20 % by weight are needed to produce a composition which exhibits such a transition at commercially or physiologically useful temperatures. Also, solutions containing 18-20 % by weight of responsive polymer are typically very viscous even in the "liquid" phase, so that these solutions can not function under conditions where low viscosity, free-flowing is required prior to transition. In addition, these polymer concentrations are so high that the material itself may cause unfavorable interactions during use.

Another known system which is liquid at room temperature, but forms a semi-solid when warmed to about body temperature is formed from tetrafunctional block polymers of polyoxyethylene and polyoxypropylene condensed with ethylenediamine, commercially available as Tetronic® polyols. These compositions are formed from approximately 10% to 50% by weight of the polyol in an aqueous medium. See, U.S. Patent No. 5,252,318.

Joshi *et al.* in U.S. Patent No. 5,252,318 reports reversible gelling compositions which are made up of a physical blend of a pH-sensitive gelling polymer (such as a cross-linked poly(acrylic acid) and a temperature-sensitive gelling polymer (such as methyl cellulose or block copolymers of poly(ethylene glycol) and poly(propylene glycol)). In compositions including methylcellulose, 5- to 8-fold increases in viscosity are observed upon a simultaneous change in temperature and pH for very low methylcellulose levels (1-4% by weight). See, Figs. 1 and 2 of Joshi *et al.* In compositions including Pluronic® and Tetronic® polyols, commercially available forms of poly(ethylene glycol)/poly(propylene glycol) block copolymers, significant increases in viscosity (5- to 8-fold) upon a simultaneous change in temperature and pH



are observed only at much higher polymer levels. See, Figs. 3-6 of Joshi *et al.*

Hoffman *et al.* in WO 95/24430 disclose block and graft copolymers comprising a pH-sensitive polymer component and a temperature-sensitive polymer component. The block and graft copolymers are well-ordered and contain regularly repeating units of the pH-sensitive and temperature-sensitive polymer components. The copolymers are described as having a lower critical solution temperature (LCST), at which both solution-to-gel transition and precipitation phase transition occur. Thus, the transition to a gel is accompanied by the clouding and opacification of the solution. Light transmission is reduced, which may be undesirable in many applications, where the aesthetic characteristics of the composition are of some concern.

Thus, the known systems which exhibit reversible gelation are limited in that they require large solids content and/or in that the increase in viscosity less than 10-fold. In addition, some known systems exhibit an increase in viscosity which is accompanied with the undesirable opacification of the composite.

#### Summary of the Invention

It is an object of the present invention to provide a cosmetic composition which includes a component capable of reversible gelation or viscosification.

It is a further object of the invention to provide a cosmetic composition which includes an ingredient capable of gelation or viscosification at very low solids content.

It is another object of the present invention to provide a cosmetic composition which possesses improved flow and gelation characteristics as compared to properties possessed by conventional reversible gelation compositions.

It is a further object of the invention to provide a polymer network composition for use in cosmetic compositions useful as a surfactant or emulsifier in the solubilization of additives and, in particular, hydrophobic additives.

It is a further object of the invention to provide a cosmetic composition which possesses the appropriate thickness, emolliency and cosmetic effect with a minimum of solids content.

It is a further object of the invention to provide a polymer network for use in

cosmetic compositions useful as a suspending agent for otherwise insoluble additives.

It is yet a further object of the present invention to provide a composition capable of solubilizing emulsions at elevated temperatures.

It is yet a further object of the invention to provide new and useful cosmetic compositions incorporating the reversibly gelling polymer network composition of the present invention, which take advantage of its unique advantageous properties.

It is yet another object of the present invention to provide reversibly gelling polymer network compositions which are composed of biocompatible polymers.

These and other objects of the invention are achieved with a cosmetic composition which incorporates a poloxamer:poly(acrylic acid) polymer network as a cosmetically acceptable carrier. The polymer network comprises a poloxamer component randomly bonded to a poly(acrylic acid), or PAA, component in an aqueous-based medium, the polymer network being capable of aggregating in response to an increase in temperature. The reverse thermal viscosifying poloxamer:poly(acrylic acid) polymer network includes random covalent bonding between the poly(acrylic acid) component and the poloxamer component of the network. The polymer network may also include some unbound or "free" poloxamer or other additives which contribute to or modify the characteristic properties of the polymer composition.

In addition, the cosmetic composition includes a cosmetic agent selected to provide a preselected cosmetic effect. By "cosmetic agent", as that term is used herein, it is meant that the additive imparts a cosmetic effect. A cosmetic effect is distinguishable from a pharmaceutical effect in that a cosmetic effect relates to the promoting bodily attractiveness or masking the physical manifestations of a disorder or disease. In contrast, a pharmaceutical seeks to treat the source or symptom of a disease or physical disorder. It is noted however, that the same additives may have either a cosmetic or pharmaceutical effect, depending upon the amounts used and the manner of administration.

By "cosmetic" as that term is used herein, it is meant the cosmetic and

personal-care applications intended to promote bodily attractiveness or to cover or mask the physical manifestations of a disorder or disease. Cosmetics include those products subject to regulation under the FDA cosmetic guidelines, as well as sunscreen products, acne products, skin protectant products, anti-dandruff products, and deodorant and antiperspirant products.

By "gelation" or viscosification, as that term is used herein, it is meant a drastic increase in the viscosity of the polymer network solution. Gelation is dependent on the initial viscosity of the solution, but typically a viscosity increase in the range of preferably 2- to 100-fold, and preferably 5- to 50-fold, and more preferably 10- to 20-fold is observed in the polymer network which is used in the preparation of the cosmetic compositions of the invention. Such effects are observed in a simple polymer network solution and the effect may be modified by the presence of other components in the cosmetic composition.

By "reversibly gelling" as that term is used herein, it is meant that the process of gelation takes place upon an *increase* in temperature rather than a decrease in temperature. This is counter-intuitive, since it is generally known that solution viscosity *decreases* with an increase in temperature.

As used herein, "poloxamer" is a triblock copolymer derived from poly(ethylene glycol)-poly(propylene glycol)-poly(ethylene glycol) blocks. The poloxamer is capable of responding to a change in temperature by altering its degree of association and/or agglomeration. The aggregation may be in the form of micelle formation, precipitation, labile crosslinking or other factors. The poloxamer has the general formula of a triad ABA block copolymer,  $(P_1)_a(P_2)_b(P_1)_a$ , where  $P_1$  = poly(ethylene glycol) and  $P_2$  = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.

The poly(acrylic acid) component includes poly(acrylic acid) and its salts. The poly(acrylic acid) supports and interacts with the poloxamer component so that a multi-material, responsive polymer network is formed. The interaction of the poloxamer and poly(acrylic acid) exhibits a synergistic effect, which magnifies the effect of the poloxamer component in viscosifying and/or gelling the solution.

The novel interaction between the constituent polymers components of the polymer network permits formation of gels at very low solids content. Gelation and/or viscosification is observed in aqueous solutions having about 0.01 to 20 wt% of the poloxamer component and about 0.01 to 20 wt% of the poly(acrylic acid) component.

5 A typical reversibly gelling polymer network may be comprised of less than about 4 wt% of total polymer solids (e.g., poloxamer and poly(acrylic acid)) and even less than 1 wt% total polymer solids while still exhibiting reverse thermal viscosification. Of course, the total solids content including additives of a reversibly gelling polymer network composition may be much higher. The viscosity of the gel increases at least  
10 ten-fold with an increase in temperature of about 5°C at pH 7 and 1 wt% polymer. Viscosity increases may be even greater over a larger temperature range at pH 7 and 1% polymer network content.

The relative proportion of poloxamer and poly(acrylic acid) may vary dependent upon the desired properties of the polymer composition. In one  
15 embodiment, the poloxamer is present in a range of about 1 to 20 wt% and the poly(acrylic acid) is present in a range about of 99 to 80 wt%. In another embodiment, the poloxamer component is present in a range of about 21 to 40 wt% and the poly(acrylic acid) component is present in a range of about 79 to 60 wt%. In another embodiment, the poloxamer component is present in a range of about 41 to 50  
20 wt% and the poly(acrylic acid) component is present in a range of about 59 to 50 wt%. In another embodiment, the poloxamer component is present in a range of about 51 to 60 wt% and the poly(acrylic acid) component is present in a range of about 49 to 40 wt%. In yet another embodiment, the poloxamer component is present in a range of about 61 to 90 wt% and the poly(acrylic acid) component is present in a  
25 range of about 39 to 20 wt%. In another embodiment, the poloxamer component is present in a range of about 81 to 99 wt% and the poly(acrylic acid) component is present in a range of about 19 to 1 wt%.

The poloxamer:poly(acrylic acid) polymer network described above is included in a cosmetic composition to improve the flow characteristics, thickness and other  
30 properties of the composition. The composition includes additional cosmetic agents.

such as are needed for the cosmetic purpose of the composition. Additives also may be included to modify the polymer network performance, such as to increase or decrease the temperature of the liquid-to-gel transition and/or to increase or decrease the viscosity of the responsive polymer composition.

5 In one aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic compositions to impart thickening properties to the cosmetic composition at the use and/or application temperature. Such thickening properties include enhanced overall viscosity, as well as a desirable viscosity response with temperature. The polymer network may be useful as a thickener in pH ranges  
10 where other thickeners are not effective.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to stabilize and solubilize hydrophobic agents in the cosmetic composition. The polymer network may be included to increase emulsion stability. Many emulsions, i.e., suspension of small  
15 droplets or particles of a first material in a second material, lose viscosity upon heating. As will be demonstrated herein, the poloxamer:poly(acrylic acid) polymer network retains its emulsifying properties even with temperature increase.

In addition, it may be included in the composition to impart emolliency to the composition. The composition may also act as a film-forming agent after it has been  
20 applied to the skin. This film-forming agent may be used as a barrier to prevent water loss from the skin which contributes to the moisturization of the skin.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network may be included as an additive in cosmetic applications to prevent viscosity loss at elevated temperatures.

#### **Brief Description of the Drawing**

The invention is described with reference to the Drawing, which is presented for the purpose of illustration and is in no way intended to be limiting, and in which:

Figure 1 is a graph of viscosity vs. temperature for a 1 wt%, 2 wt% and 3 wt%  
30 responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid)

(1:1) at pH 7.0 measured at a shear rate of  $0.44 \text{ sec}^{-1}$ ;

Figure 2 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition demonstrating reversibility of the viscosity response;

5 Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates;

Figure 4 shows a viscosity response curve for a 2 wt% poloxamer: poly(acrylic acid) polymer network composition prepared with nominal mixing and stirring and prepared using high shear homogenization (8000 rpm, 30 min);

10 Figure 5 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition at various pHs;

Figure 6 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.25 wt% KCl;

15 Figure 7 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.5 wt% acetamide MEA;

Figure 8 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition without and with 5 wt%, 10 wt% and 20 wt% added ethanol, respectively;

20 Figure 9 is an illustration of a reversibly gelling polymer network used as an emulsifier and stabilizer for a hydrophobic agent;

Figure 10 is a schematic illustration of the poloxamer:poly(acrylic acid) polymer network below and above the transition temperature illustrating the aggregation of the hydrophobic poloxamer regions;

25 Figure 11 is a graph of viscosity vs. pH for a 1 wt% responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid) (1:1) measured at a shear rate of  $0.44 \text{ sec}^{-1}$ ;

30 Figure 12 is a plot of viscosity vs. temperature for (a) a 1 wt% responsive polymer network aqueous composition of Pluronic® F127 poloxamer/poly(acrylic acid)

(1:1) and (b) a 1 wt% physical blend of Pluronic® F127 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate  $0.22 \text{ sec}^{-1}$ ;

Figure 13 is a plot of viscosity vs. temperature for a 1 wt% responsive polymer network aqueous composition of Pluronic® F88 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate  $2.64 \text{ sec}^{-1}$ ;

Figure 14 is a graph of the viscosity vs. temperature effect for a responsive polymer network composition of 2 wt% Pluronic® P104 poloxamer/poly(acrylic acid) (1:1) in deionized water at pH 7.0 measured at shear rate of  $22 \text{ sec}^{-1}$ ;

Figure 15 is plot of viscosity vs. temperature for a responsive polymer network composition of 2 wt% Pluronic® F123 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of  $22 \text{ sec}^{-1}$ ;

Figure 16 is a plot of viscosity vs. temperature for 1 wt% made of series of poloxamers and poly(acrylic acid) (1:1) in deionized water at a shear rate of  $132 \text{ sec}^{-1}$ ;

Figure 17 is a plot showing release of hemoglobin from a poloxamer/poly(acrylic acid) polymer network of the invention;

Figure 18 is a plot showing the release of lysozyme from the poloxamer/poly(acrylic acid) polymer complex of the invention;

Figure 19 is a plot showing release of insulin from a poloxamer/poly(acrylic acid) polymer network composition of the invention;

Figure 20 is a plot of viscosity vs. temperature for a poloxamer/poly(acrylic acid) polymer network composition (a) before and (b) after sterilization by autoclave;

Figure 21 is a plot of viscosity vs. temperature for an oil-free moisturizing formulation prepared from (a) a responsive polymer network composition of the invention and (b) a conventional oil-in-water formulation;

Figure 22 is a plot of equilibrium solubility of estradiol (A, B) and progesterone (C, D) in aqueous solutions (pH 7) of Pluronic® F127 (A, C) and responsive polymer network (B, D) vs. temperature;

Figure 23 is a plot of the ratio of equilibrium solubilities of estradiol in responsive polymer network and water vs. polymer concentration in the responsive polymer network solutions;

Figure 24 is a plot of the effect of loading fluorescein on the onset of gelation of responsive polymer network vs. total polymer concentration in responsive polymer network solution (pH 7.0);

Figure 25 is a plot of the percentage of a) estradiol and b) progesterone release  
5 from responsive polymer network vs. time;

Figure 26 is a plot of the rate of progesterone release and macroscopic viscosity vs. polymer concentration;

Figure 27 is a plot of the percentage of progesterone release vs. polymer concentration in responsive polymer network and,

10 Figure 28 is a plot of the relative diffusivity of poly(styrene) latex particles in water and responsive polymer network.

### Detailed Description of the Invention

The present invention is directed to a cosmetic composition comprising a  
15 cosmetically acceptable carrier comprising a novel poloxamer:poly(acrylic acid) polymer network. The polymer network functions as a temperature sensitive thickening agent, and in addition possesses surfactant and emulsifying capabilities which may be beneficial to the cosmetic composition. The polymer network composition according to the invention includes a poloxamer component randomly  
20 bonded to a poly(acrylic acid) component. The two polymer components may interact with one another on a molecular level. The polymer network contains about 0.01-20 wt% each of poloxamer and poly(acrylic acid). Exemplary polymer network compositions range from about 1:10 to about 10:1 poloxamer:poly(acrylic acid). Polymer network gel compositions which exhibit a reversible gelation at body  
25 temperature (25-40°C) and/or at physiological pH (ca. pH 3.0-9.0) and even in basic environments up to pH 13 (hair care) are particularly preferred for cosmetic applications.

In one embodiment of the invention, a 1:1 poloxamer:poly(acrylic acid) polymer network at appropriate pH exhibits flow properties of a liquid at about room  
30 temperature, yet rapidly thickens into a gel consistency of at least about five times



greater, preferably at least about 10 times greater, and even more preferably at least about 30 times and up to 100 times greater, viscosity upon increase in temperature of about 10 °C and preferably about 5 °C. The reversibly gelling polymer network of the present invention exhibit gelation even at very low polymer concentrations. For

5 example, polymer network compositions at pH 7 comprising about 0.5 wt% poloxamer component and about 0.5 wt% PAA exhibits a significant increase in viscosity from a free-flowing liquid (50 cps) to a gel (6000 cps). The observed gelation takes place at low solids contents, such as less than 20 wt% or preferably less than about 10 wt%, or more preferably less than about 2.5 wt% or most preferably less than about 0.1 wt%.

10 Thus, only a small amount by weight of the polymer network need be incorporated into a cosmetic composition in order to provide the desired thickening or viscosifying effect.

The reverse viscosification effect at low polymer concentrations provides clear, colorless gels which are particularly well-suited to cosmetic applications. For example, 15 very little residue is formed upon dehydration which may be important in some applications, such as in topically applied cosmetics. An additional advantage of the polymer network of the invention is that it remains clear and translucent above and below the critical temperature or pH. These characteristics of the reversibly gelling polymer network make it well suited for use in cosmetic compositions.

20 The polymer network of the present invention technology may be added to cosmetic formulations to increase the thickness and viscosity of the composition. The poloxamer:poly(acrylic acid) polymer network possesses hydrophobic regions capable of aggregation. Unlike conventional thickeners, the aggregation of the polymer network of the present invention is temperature sensitive. Thus, the inventive polymer 25 network of the present invention may have a transition temperature (i.e. temperature of aggregation) above room temperature so that the cosmetic composition is of low viscosity at or below room temperature and is of high viscosity at or around body temperature (body temperature includes both surface and internal body temperature).

30 Thus, a composition may be prepared at low temperatures while the polymer network is in a low viscosity state. Mixing of ingredients under low viscosity is expected to be

easier, thus simplifying the manufacturing process. Yet, the resultant mixture would be of increased viscosity at use temperatures. As a further advantage, a cosmetic composition comprising poloxamer:poly(acrylic acid) polymer network may be spread thinly to allow for even application, due to its low viscosity at room temperature, but  
5 will thicken and "fill" the skin contours upon warming up to body surface temperature.

In another aspect of the invention, the composition may be applied through a nozzle that provides high shear to reduce viscosity, yet the composition regains its viscosity after application to the skin. This contrasts with conventional formulations which permanently lose viscosity after being subjected to high shear.

10 In another aspect of the invention, the composition may be formulated and applied as a liquid, spray, semi-solid gel, cream, ointment, lotion, stick, roll-on formulation, mousse, pad-applied formulation, and film-forming formulation.

The poloxamer:poly(acrylic acid) polymer network may also be included in a cosmetic composition for use as a stabilizing, solubilizing or emulsifying agent for a  
15 hydrophobic component of the cosmetic formulation. The strong hydrophilic regions of the poloxamer resulting from aggregation and micelle formation create hydrophobic domains which may be used to solubilize and control release of hydrophobic agents. Similar micelle-based systems have been shown to protect trapped peptides against enzymatic degradation from surface enzymes.

20 The reversibly gelling polymer network of the present invention is a unique polymer composition designed to abruptly change its physical characteristics or the characteristics and properties of materials mixed therewith with a change in temperature. Without intending to be bound by any particular mechanism or chemical structure, it is believed that the structure of the polymer network involves a random  
25 bonding of the poloxamer onto the backbone of the poly(acrylic acid). A portion of the poloxamer which is present during the polymerization reaction which forms the poly(acrylic acid) is bonded to the backbone of the forming poly(acrylic acid) through hydrogen abstraction and subsequent reaction. See detailed discussion of the mechanism, below. The combination of the poly(acrylic acid) and randomly bonded  
30 poloxamer gives the composition its unique properties. Any free poloxamer remaining

after polymerization of PAA remains associated with the random co-polymer, resulting in a miscible composition. Free poloxamer may also be present in the polymer network composition; however, its presence is not required in order to observe reverse thermal viscosification.

5        The poly(acrylic acid) may be linear, branched and/or crosslinked. Poly(acrylic acid) is capable of ionization with a change in pH of the solution. By ionization, as that term is used with respect to poly(acrylic acid), it is meant the formation of the conjugate base of the acrylic acid, namely acrylate. As used herein, poly(acrylic acid) includes both ionized and non-ionized versions of the polymer. Changes in ionic  
10       strength may be accomplished by a change in pH or by a change in salt concentration. The viscosifying effect of the polymer network is partly a function of the ionization of the poly(acrylic acid); however, reverse thermal gelling may occur without ionization. Changes to the ionic state of the polymer causes the polymer to experience attractive (collapsing) or repulsive (expanding) forces. Where there is no need or desire for the  
15       composition to be applied in a high viscosity state, it may be possible to prepare the composition as non-ionized poly(acrylic acid). The body's natural buffering ability will adjust the pH of the applied composition to ionize the poly(acrylic acid) and thereby develop its characteristic viscosity.

      The poloxamer possesses regions of hydrophobic character, e.g., poly(propylene glycol) blocks, and hydrophilic character, e.g., poly(ethylene glycol) blocks. The  
20       poloxamer may be linear or branched. Suitable poloxamers include triad block copolymers of poly(ethylene glycol) and poly(propylene glycol) having the general formula  $(P_1)_a(P_2)_b(P_1)_a$ , where  $P_1$  = poly(ethylene glycol) and  $P_2$  = poly(propylene glycol) blocks, where  $a$  is in the range of 10-50 and where  $b$  is in the range of 50-70.  
25       where poly(propylene glycol) represents the hydrophobic portion of the polymer and poly(ethylene glycol) represents the hydrophilic portion of the polymer. Pluronic® polymers (BASF) are commercially available for  $a$  in the range of 16 to 48 and  $b$  ranging from 54-62. One or more poloxamers may be used in the reversibly gelling polymer network composition of the present invention.

30       The reversibly gelling responsive polymer networks compositions of the present

invention are highly stable and do not exhibit any phase separation upon standing or upon repeated cycling between a liquid and a gel state. Samples have stood at room temperature for more than three months without any noticeable decomposition, clouding, phase separation or degradation of gelation properties. This is in direct contrast to polymer blends and aqueous mixed polymer solutions, where phase stability and phase separation is a problem, particularly where the constituent polymers are immiscible in one another.

An example of the dramatic increase in viscosity and of the gelation of the reversibly gelling polymer network compositions of the invention is shown in Figure 1. Figure 1 is a graph of viscosity vs. temperature for 1 wt%, 2 wt% and 3 wt% polymer network compositions comprising 1:1 poloxamer:poly(acrylic acid), hydrated and neutralized. The viscosity measurements were taken on a Brookfield viscometer at a shear rate of  $0.44 \text{ sec}^{-1}$  at pH 7.0. All solutions had an initial viscosity of about 1080 cP and exhibited a dramatic increase in viscosity to gel point at about  $35^{\circ}\text{C}$ . This is not typical of all polymer network compositions since polymerization condition will affect initial viscosity. Final viscosities were approximately 33,000 cP, 100,000 cP and 155,000 cP for the 1 wt%, 2 wt% and 3 wt% compositions, respectively. This represents viscosity increases of about 30-, 90- and 140-fold, respectively. This effect is entirely reversible. Upon cooling, the composition regains its initial viscosity. This is demonstrated in Figure 2, where a 1 wt% poloxamer:poly(acrylic acid) composition is warmed through the transition temperature up to  $35^{\circ}\text{C}$  (simple curve), cooled to room temperature ( $24^{\circ}\text{C}$ , ticked curve) and then warmed again to up above the transition temperature (open box curve). The viscosity response was virtually identical in all three instances.

As would be expected with a non-Newtonian system, the solution viscosity differs with different shear rates. Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates. The viscosity response is consistent between  $24^{\circ}\text{C}$  and  $34^{\circ}\text{C}$ ; however, the final viscosity is reduced with increasing shear rate.

However, unlike many prior art hydrogels, e.g., carbomers, the

poloxamer:poly(acrylic acid) polymer network composition does not permanently lose viscosity after being subjected to high shear conditions. The poloxamer:poly(acrylic acid) polymer network composition remains unaffected by such shear conditions as homogenization. Figure 4 compares the viscosity response curve of a 2 wt% poloxamer:poly(acrylic acid) polymer composition prepared with nominal mixing (simple lime) and stirring with that of a polymer composition of similar composition prepared using high shear homogenization designated by a ticked line (8000 rpm, 30 min). No significant decrease in viscosity is observed.

A number of factors influence the viscosity and transition temperature of the composition. The more important factors include polymer concentration, pH and presence and nature of additives.

The effect of pH on the viscosity of reversibly gelling polymer networks is shown in Figure 5. Increasing pH from the starting pH has a lesser effect on the viscosity than decreasing the pH. This may relate to the extent of ionization of the poly(acrylic acid) component of the polymer network as discussed above. This may be clearly seen in Figure 5 when comparing the viscosity response of a 1 wt% poloxamer:poly(acrylic acid) polymer composition at pH 5 and pH 11. Satisfactory viscosities can be obtained at high pHs indicating the potential value of the reversibly gelling polymer network in products such as depilatories, hair straighteners and hair relaxers.

The responsive polymer network may also include additives for influencing the performance of the polymer composition, such as the transition temperature and the viscosity of the polymer composition above the transition temperature. The following list is not intended to be exhaustive but rather illustrative of the broad variety of additives which can be used.

These materials include solvents (e.g., 2-propanol, ethanol, acetone, 1,2-pyrrolidinone, N-methylpyrrolidinone), salts (e.g., calcium chloride, sodium chloride, potassium chloride, sodium or potassium phosphates, borate buffers, sodium citrate), preservatives (benzalkonium chloride, phenoxyethanol, sodium hydroxymethylglycinate, ethylparaben, benzoyl alcohol, methylparaben, propylparaben,

butylparaben, Germaben II), humectant/moisturizers (acetamide MEA, lactimide MEA, hydrolyzed collagen, mannitol, panthenol, glycerin), lubricants (hyaluronic acid, mineral oil, PEG-60-lanolin, PPG-12-PEG-50-lanolin, PPG-2 myristyl ether propionate) and surfactants.

5           Surfactants may be divided into three classes: cationic, anionic, and nonionics. An example of a cationic surfactant used is ricinoleamidopropyl ethyldimonium ethosulfate (Lipoquat R). Anionic surfactants include sodium dodecyl sulfate and ether sulfates such as Rhodapex CO-436. Nonionic surfactants include Surfynol CT-111, TG, polyoxyethylene sorbitan fatty acid esters such as Tween 65 and 80, sorbitan fatty  
10 acid esters such as Span 65, alkylphenol ethoxylates such as Igepal CO-210 and 430, dimethicone copolyols such as Dow Corning 190, 193, and Silwet L7001.

          The addition of polymers has been studied including xanthan gum, celluloses such as hydroxyethylcellulose (HEC), carbomethoxycellulose (CMC), lauryldimonium hydroxypropyl oxyethyl cellulose (Crodacel QL), hydroxypropylcellulose (HPC), and  
15 hydroxypropylmethylcellulose (HPMC), poly(acrylic acid), cyclodextrins, methyl acrylamido propyl triammonium chloride (MAPTAC), polyethylene oxide, polyvinylpyrrolidone, polyvinyl alcohol, and propylene oxide/ethylene oxide random copolymers. Poloxamers may also be used as additives. Examples include both the Pluronic® polyols having an  $(P_1)_3(P_2)_3(P_3)_3$  structure such as Pluronic® F38, L44, P65,  
20 F68, F88, L92, P103, P104, P105, F108, L122 and F127, as well as the reverse Pluronic® R series  $(P_2)_3(P_1)_3(P_3)_3$  structure such as Pluronic® 17R2 and 25R8. Other miscellaneous materials include propylene glycol, urea, triethanolamine, alkylphenol ethoxylates (Iconol series), and linear alcohol alkoxylates (Plurafac series).

          Additives affect the viscosity of the compositions differently depending upon  
25 the nature of the additive and its concentration. Some additives will affect the initial or final viscosity, whereas others will affect the temperature range of the viscosity response, or both.

          Potassium chloride and acetamide MEA are two examples of additives which decrease the final viscosity of the composition (see, Example 30). KCl (0.25%) added  
30 to a 1 wt% reversibly gelling polymer composition reduces the viscosity by about 3000

cps. See, Figure 6. The humectant, acetamide MEA, lowers the viscosity of a 1 wt% solution by approximately 1,500 cps (see, Figure 7).

Glycerin, ethanol and dimethicone copolymer have been shown to affect the temperature range over which the viscosity response occurs. Glycerin shifts the transition temperature to a slightly lower range from an initial 24-34 °C to about 24-30 °C, but does not affect the final viscosity (see, Example 44). The effect of ethanol on the viscosity is different at different concentration levels. At 5 wt% and 10 wt% added ethanol, the transition temperature is shifted to lower ranges, e.g., 24-29 °C and 20-29 °C, respectively. At 20 wt% added ethanol, the composition not only exhibits a lowering of the transition temperature, but also a marked increase in initial and final viscosity. See, Figure 8. Dimethicone copolymer (1 wt%) also changed the transition temperature, but in this instance the transition temperature range was raised to 28-41 °C. Thus, proper selection of additives permits the formulator to adjust the transition temperature to various ranges.

Those skilled in the art will appreciate that the polymer network compositions of the present invention may be utilized for a wide variety of cosmetic and personal care applications. To prepare a cosmetic composition, an effective amount of cosmetically active agent(s) which imparts the desirable cosmetic effect is incorporated into the reversibly gelling polymer network composition of the present invention. Preferably the selected agent is water soluble, which will readily lend itself to a homogeneous dispersion through out the reversibly gelling polymer network composition; however, the polymer network has been demonstrated to significantly solubilize or suspend hydrophilic agents in order to improve formulation homogeneity (see, Example 36). It is also preferred that the agent(s) is nonreactive with the polymer network composition. For materials which are not water soluble, it is also within the scope of the invention to disperse or suspend powders or oil (lipophilic materials) throughout the polymer network composition. It will also be appreciated that some applications may require a sterile environment. It is contemplated as within the scope of the invention that the reversibly gelling polymer network compositions of the present invention may be prepared under sterile conditions. An additional feature

of the reversibly gelling polymer composition is that is prepared from constituent polymers that have known accepted toxicological profiles.

The poloxamer:poly(acrylic acid) polymer network has been evaluated under Good Laboratory Practice (GLP) standard protocols known in the art for toxicity in animal models and found to exhibit no toxic effects. The results of the toxicity study are summarized in the following Table 1. The non-toxicity of the polymer network makes it an ideal candidate for use in cosmetic compositions.

Table 1. Toxicity data for 6% poloxamer:poly(acrylic acid) solution at pH 7.

Reaction testes	mode of testing	results
Skin sensitization	guinea pig - topical	not a sensitizer
eye irritation	rabbit eye instillation	negative
primary dermal irritation	rabbit - topical	very slight edema (1 on a scale of 1-8)
acute dermal toxicity	rat - single dose (2g/kg)	no toxicity
acute oral toxicity	rat - single dose (5g/kg)	no toxicity
AMES test		negative

Exemplary cosmetic and personal care applications, for which the reversibly gelling polymer network composition may be used include, but are not limited to, baby products, such as baby shampoos, lotions, powders and creams; bath preparations, such as bath oils, tablet and salts, bubble baths, bath fragrances and bath capsules; eye makeup preparations, such as eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover and mascara; fragrance preparations, such as colognes and toilet waters, powders and sachets; noncoloring hair preparations, such as hair conditioner, hair spray, hair straighteners, permanent waves, rinses shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations such as hair dye, hair tints, hair shampoos, hair color sprays, hair lighteners and hair bleaches; makeup preparations such as face powders, foundations, leg and body paints, lipstick, makeup bases, rouges and makeup fixatives; manicuring preparations such as basecoats and



undercoats, cuticle softeners, nail creams and lotions, nail extenders, nail polish and enamel, and nail polish and enamel remover; oral hygiene products such as dentrifices and mouthwashes; personal cleanliness, such as bath soaps and detergents, deodorants, douches and feminine hygiene product; shaving preparations such as aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap and preshave lotions; skin care preparations such as cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders and sprays, moisturizers, night preparations, paste masks, and skin fresheners; and suntan preparations such as suntan creams, gels and lotions, indoor tanning preparations.

Preparation of the above-named cosmetic compositions and others may be accomplished with reference to any of the cosmetic formulation guidebooks and industry journals which are available in the cosmetic industry. These references supply standard formulations which may be modified by the addition or substitution of the reversible viscosifying polymer network of the present invention into the formulation. Suitable guidebooks include Cosmetics and Toiletries Magazine, Vol. 111 (March, 1996); Formulary: Ideas for Personal Care; Croda Inc. Parsippany, NJ (1993); and Cosmeticon: Cosmetic Formulary, BASF, which are hereby incorporated in their entirety by reference.

The cosmetic composition may be in any form. Suitable forms include but are not limited to lotions, creams, sticks, roll-ons formulations, mousses, aerosol sprays, pad-applied formulations, and film-forming formulations.

As those skilled in the art will appreciate, the foregoing list is exemplary only. Because the reversibly gelling polymer network composition of the present invention is suited for application under a variety of physiological conditions, a wide variety of cosmetically active agents may be incorporated into and administered from the polymer network composition. In addition to the poloxamer:poly(acrylic acid) polymer network, additional cosmetically acceptable carriers may be included in the composition, such as by way of example only, emollients, surfactants, humectants, powders and other solvents. By way of example only, the cosmetic composition also may include additional components, which serve to provide additional aspects of the

cosmetic affect or to improve the stability and/or administration of the cosmetic. Such additional components include, but are not limited to, preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticeululites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, astringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances. Suitable materials which serve the additive functions listed here are well known in the cosmetic industry. A listing of the additive function and materials suitable for incorporation into the cosmetic composition may be found in Appendix A, which is appended hereto at the end of the specification. Further information may be obtained by reference to The Cosmetic Bench Handbook, Cosmetics & Toiletries; C.C. Urbano, editor, Allured Publ. Corp., 1996, which is hereby incorporated in its entirety by reference.

A brief description of some preferred additives and cosmetically active agents follows. The compositions of the invention include a safe and effective amount of a cosmetically active agent. "Safe and effective", as it is used herein, means an amount high enough to significantly positively modify the condition to be treated or the cosmetic effect to be obtained, but low enough to avoid serious side effects.

Preservatives can be desirably incorporated into the cosmetic compositions of the invention to protect against the growth of potentially harmful microorganisms.

Suitable preservatives include, but are not limited to, alkyl esters of para-hydroxybenzoic acid, hydantoin derivatives, parabens, propionate salts, triclosan tricarbanilide, tea tree oil, alcohols, farnesol, farnesol acetate, hexachlorophene and quaternary ammonium salts, such as benzolconjure, and a variety of zinc and  
5 aluminum salts. Cosmetic chemists are familiar with appropriate preservatives and may select that which provides the required product stability. Preservatives are preferably employed in amounts ranging from about 0.0001% to 2% by weight of the composition.

Emollients can be desirably incorporated into the cosmetic compositions of the  
10 invention to provide lubricity to the formulation. Suitable emollients may be in the form of volatile and nonvolatile silicone oil, highly branched hydrocarbons and synthetic esters. Amounts of emollients may be in the range of about 0.1-30 wt%, and preferably about 1-20 wt%. By way of example only, suitable silicones include cyclic or linear polydimethylsiloxanes, polyalkylsiloxanes, polyalkylarylsiloxanes and  
15 polyether siloxanes. By way of example only, suitable ester emollients include alkenyl esters of fatty acids, polyhydric alcohols, such as ethylene glycol mono and di-fatty acid esters, polyethylene glycol and the like, ether-esters, such as fatty acid esters of ethoxylated fatty alcohols, wax esters, such as beeswax, spermaceti, myristyl myristate, and stearyl stearate, and sterol esters, such as cholesterol fatty acids.

A variety of oily emollients may be employed in the compositions of this  
20 invention. These emollients may be selected from one or more of the following classes: 1. Triglyceride esters such as vegetable and animal fats and oils. Examples include castor oil, cocoa butter, safflower oil, cottonseed oil, corn oil, olive oil, cod liver oil, almond oil, avocado oil, palm oil, sesame oil, squalene, Kikui oil and  
25 soybean oil; 2. Acetoglyceride esters, such as acetylated monoglycerides; 3. Ethoxylated glycerides, such as ethoxylated glyceryl monostearate; 4. Alkyl esters of fatty acids having 10 to 20 carbon atoms, such as, methyl, isopropyl, and butyl esters of fatty acids, and including hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate decyl stearate,  
30 isopropyl isostearate, diisopropyl adipate, diisohexyl adipate, dihexyldecyl adipate,

diisopropyl sebacate, lauryl lactate, myristyl lactate, and ceryl lactate; 5. alkenyl esters of fatty acids having 10 to 20 carbon atoms, such as oleyl myristate, oleyl stearate, and oleyl oleate and the like; 6. fatty acids having 10 to 20 carbon atoms, such as pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic, oleic, linoleic, ricinoleic, arachidic, behenic, and erucic acids and the like; 7. fatty alcohols having 10 to 20 carbon atoms, such as, lauryl, myristyl, cetyl, hexadecyl, stearyl, isostearyl, hydroxystearyl, oleyl, ricinoleyl, behenyl, erucyl, and 2-octyl dodecanyl alcohols are examples of satisfactory fatty alcohols and the like; 8. fatty alcohol ethers, such as ethoxylated fatty alcohols of 10 to 20 carbon atoms including the lauryl, cetyl, stearyl, isostearyl, oleyl, and cholesterol alcohols, having attached thereto from 1 to 50 ethylene oxide groups or 1 to 50 propylene oxide groups; 9. ether-esters such as fatty acid esters of ethoxylated fatty alcohols; 10. Lanolin and derivatives, such as lanolin, lanolin oil, lanolin wax, lanolin alcohols, lanolin fatty acids, isopropyl lanolate, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylated cholesterol, propoxylated lanolin alcohols, acetylated lanolin alcohols, lanolin alcohols linoleate, lanolin alcohols ricinoleate, acetate of lanolin alcohols ricinoleate, acetate of ethoxylated alcohols-esters, hydrogenolysis of lanolin, ethoxylated hydrogenated lanolin, ethoxylated sorbitol lanolin, and liquid and semisolid lanolin absorption bases and the like; 11. polyhydric alcohol esters, such as, ethylene glycol mono and di-fatty acid esters, diethylene glycol mono- and di-fatty acid esters, polyethylene glycol (200-6000) mono- and di-fatty acid esters, propylene glycol mono- and di-fatty acid esters, polypropylene glycol 2000 monooleate, polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters, polyglycerol polyfatty esters, ethoxylated glyceryl monostearate, 1,2-butylene glycol monostearate, 1,2-butylene glycol distearate, polyoxyethylene polyol fatty acid ester, sorbitan fatty acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory polyhydric alcohol esters; 12. wax esters such as beeswax, spermaceti, myristyl myristate, stearyl stearate; 13. beeswax derivatives, e.g. polyoxyethylene sorbitol beeswax; 14. vegetable waxes including carnauba and candelilla waxes; 15. phospholipids such as lecithin and derivatives; 16. sterol including cholesterol and cholesterol fatty acid

esters; 17. amides such as fatty acid amides, ethoxylated fatty acid amides, solid fatty acid alkanolamides.

Humectants may be added to the composition to increase the effectiveness of the emollient, to reduce scaling, to stimulate removal of built-up scale and improve skin feel. By way of example only, suitable humectants include polyhydric alcohols, such as glycerol, polyalkylene glycols, alkylene polyols their derivatives, propylene glycol, dipropylene glycol, polypropylene glycol, polyethylene glycol, sorbitol, hydroxypropyl sorbitol, hexylene glycol, 1,3-butylen glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and the like. The amount of humectant may be in the range of about 0.5-30 wt% and preferably between 1-15 wt%.

In topical skin care applications, a variety of active substances may be advantageously employed. By way of example only suitable active agents which may be incorporated into the cosmetic composition include anti-aging active substances, anti-wrinkle active substances, hydrating or moisturizing or slimming active substances, depigmenting active substances, substances active against free radicals, anti-irritation active substances, sun protective active substances, anti-acne active substances, firming-up active substances, exfoliating active substances, emollient active substances, and active substances for the treating of skin disorders such as dermatitis and the like.

By way of example only, in the case of hydration, one or more moisturizers may be used, such as glycerin or urea, in combination with one or more precursor agents for the biosynthesis of structural proteins, such as hydroxyproline, collagen peptides and the like.

By the way of example only, in case of slimming, at least one ketolytic agent or an alpha-hydroxyacid such a salicylic acid or 5-n-octanoicsalicylic acid may be used in combination with at least on liporegulating agent such as caffeine.

By way of example only, in the case of depigmentation, at least one keratolytic agent is used in combination with a depigmenting agent such as hydroquinone, tyrosinasee inhibitor (kolic acid), ascorbic acid, kojic acid and sodium metabisulfite an the like.

By way of example only, in the case of protection against free radical agents, vitamin E (against COO<sup>•</sup> radicals), superoxide dismutase (against O<sub>2</sub><sup>•</sup> free radicals) and sugar and caffeine (against OH<sup>•</sup> free radicals).

By way of example only, in the case of anti-aging, moisturizers, sunscreens,  
5 alpha-hydroxyacids, salicylic acid or surface restructuring agents may be used in combination with enzymes for the repair of DNA, vascular protective agents or phospholipids rich in oligoelements and polyunsaturated fatty acids.

By way of example only, in the case of anti-acne agents, keratolytics, such as salicylic acid, sulfur, lactic acid, glycolic, pyruvic acid, urea, resorcinol and N-  
10 acetylcysteine, and retinoids, such as retinoic acid and its derivatives may be used.

By way of example only, in the case of anti-inflammation, non-steroidal anti-inflammatory agents (NSAIDS) may be used, such as propionic acid derivatives, acetic acid, fenamic acid derivatives, biphenylcarboxylic acid derivatives, oxicams, including but not limited to aspirin, acetaminophen, ibuprofen, naproxen, benoxaprofen,  
15 flurbiprofen, fenbufen, ketoprofen, indoprofen, piroprofen, carprofen, and bucloxic acid and the like.

By way of example only, in the case of antibiotics and antimicrobials may be included in the composition of the invention. Antimicrobial drugs preferred for inclusion in compositions of the present invention include salts of  $\beta$ -lactam drugs,  
20 quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methenamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole and  
25 amanfadine and the like.

By way of example only, in the case of sunscreen protection, suitable agents include 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenyl p-methoxycinnamate, 2-ethylhexyl octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-t-  
30 butyldibenzoylmethane, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-

methylbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof and the like. The sunscreens disclosed therein have, in a single molecule, two distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range. These sunscreens provide higher efficacy, broader UV absorption, lower skin penetration and longer lasting efficacy relative to conventional sunscreens. Generally, the sunscreens can comprise from about 0.5% to about 20% of the compositions useful herein. Exact amounts will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF). SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

By way of example only, in the case of sunless tanning agents include dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like.

The composition may include cleansing surfactants. Cleansing surfactants are cationic, anionic, amphoteric or non-ionic surfactants which are water-soluble and produce a consumer-acceptable amount of foam. Nonionic surfactants are well-known materials and have been used in cleansing compositions. Therefore, suitable nonionic surfactants include, but are not limited to, compounds in the classes known as alkanolamides, block copolymers of ethylene and propylene, ethoxylated alcohols, ethoxylated alkylphenols, alkyl polyglycosides and mixtures thereof. In particular, the nonionic surfactant can be an ethoxylated alkylphenol, i.e., a condensation product of an alkylphenol having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to at least about 8 moles ethylene oxide per mole of alkylphenol. Examples of compounds of this type include nonylphenol condensed with about 9.5 moles of ethylene oxide per mole of phenol; dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol; dinonylphenol condensed with about 15 moles of ethylene oxide per mole of phenol; octylphenol condensed with about ten moles of ethylene oxide per mole of phenol; and diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of

phenol.

A wide variety of acids, bases, buffers, and sequestrants can be utilized to adjust and/or maintain the pH and ionic strength of the compositions useful in the instant invention. Materials useful for adjusting and/or maintaining the pH and/or the ionic strength include sodium carbonate, sodium hydroxide, hydrochloric acid, phosphoric acid, sulfuric acid, acetic acid, sodium acetate, sodium hydrogen phosphate, sodium dihydrogen phosphate, citric acid, sodium citrate, sodium bicarbonate, triethanolamine, EDTA, disodium EDTA, tetrasodium EDTA, and the like.

The polymer network may be useful as a solubilization agent in cosmetic and personal care applications. A self-assembling system comprising the reversibly gelling polymer network exhibits thermogelation, pH sensitivity, and the ability to solubilize hydrophobic agents in aqueous media. When poloxamer is copolymerized with poly(acrylic acid) (PAA) according to the invention, the resulting copolymer network is bioadhesive and can be applied in a number of therapies. The materials described in this invention combine "reverse" thermoviscosification mucoadhesion, solubilization of hydrophobic and difficult to manage moieties, easy formulation, and protection of agents from degradation to provide a superior medium for cosmetic and personal care products.

The reversible viscosification of the polymer network at elevated temperatures makes the materials ideal for use as thickening agents in cosmetic and personal care products at any temperature above the transition. Another use of the "thickening" of solutions containing the polymer network as a thickener supplement in emulsions. Currently emulsifiers are often negatively effected by increased temperatures. An additive with reverse thermal viscosification properties, however, would react in exactly the opposite way, increasing its ability to emulsify as it gained three-dimensional structure upon heating above its transition temperature.

In the applications where the reversibly gelling polymer composition can act as a surfactant, the polymer network will have the ability to act as a primary emulsifier without any (or with very little) addition of traditional surfactant. The responsive polymer network will also act as a stabilizer for oil-soluble ingredients that would



conventionally need to be solubilized by oils in formulation. The hydrophobic portion of the polymer network (PPO) forms domains which act as reservoirs for an oil-soluble or hydrophobic additive, such as an oil droplet, as is illustrated in Figure 9.

These two features of the material of the invention would enable it to be used as a base in a cosmetic formulation that would be non-greasy due to lack of oils, such as petrolatum and mineral oil. The increase in viscosity above the transition temperature adds structure and yield value to the water phase and results in a highly stable emulsion.

Thus, poloxamer:poly(acrylic acid) polymer network compositions are valuable materials in the formulation of cosmetic and personal care products. In particular, they may be useful as rheology modifiers, provide a cushioning effect on the skin, offer barrier properties and controlled release of actives. In addition, the polymer composition may serve as a surfactant and is compatible with most ingredients used in the cosmetic industry.

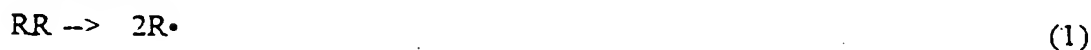
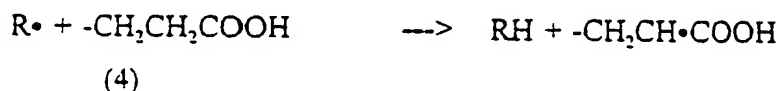
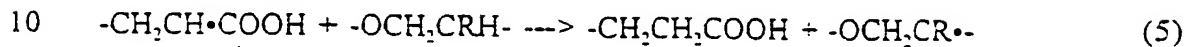
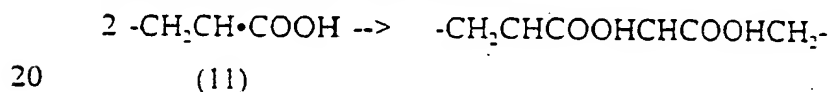
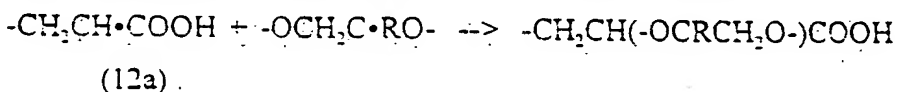
The above properties of the poloxamer:poly(acrylic acid) polymer network provides a cosmetic composition that spreads evenly and smoothly and which leaves a lubricious feel to the skin. A sensory evaluation was conducted with seven random volunteers in order to determine the sensory effect of a cream formulation on the skin. An oil-free cosmetic formulation was prepared substantially as set forth in Example 33(b) and was compared to Nivea Oil Free, a product of Beiersdorf of Germany. Volunteers placed unmarked samples on the skin and evaluated the formulation based upon its feel and texture. The samples were rated on a scale of 1 (bad) to 5 (good). The oil-free cosmetic formulation of the present invention scored equally to the Nivea Oil Free moisturizing product. Both samples scored a 3.5 on the rating scale.

The observed thermal behavior of the reversibly gelling polymer network suggests that the increase in viscosity is due to aggregation of the hydrophobic portion of the poloxamer at the transition temperature which, because of bonding with the poly(acrylic acid) component, serve as temporary cross-links which physically bridge adjacent chains of poly(acrylic acid) to provide a viscous gel-like extended polymer structure. The aggregation process may be understood as occurring as shown in Figure

10, in which a backbone 20 represent poly(acrylic acid), a thin band 24 represents the hydrophobic poly(propylene) glycol region of the poloxamer and a thick band 26 represents the hydrophilic poly(ethylene glycol) region of the poloxamer. Below the transition temperature, the polymer network is randomly arranged, as is shown in Figure 10(a). At or above the transition temperature, the hydrophobic regions 24 associate to form aggregations or micelles 28, as is shown in Figure 10(b). The association increases the effective molecular weight of the polymer network composition with the corresponding increase in viscosity.

A general method of making the poloxamer:PAA polymer network compositions of the present invention comprises solubilization of the poloxamer in acrylic acid monomer, followed by polymerization of the monomer to PAA. Polymerization may be accomplished by addition of a polymerization initiator or by irradiation techniques. The initiator may be a free radical initiator, such as chemical free radical initiators and uv or gamma radiation initiators. Conventional free radical initiators may be used according to the invention, including, but in no way limited to ammonium persulfate, benzoin ethyl ether, benzyl peroxide, 1,2'-azobis(2,4-dimethylpentanitrile) (Vazo 52) and azobisisobutyronitrile (AIBN). Initiation may also be accomplished using cationic or ionic initiators. Many variations of this methods will be apparent to one skilled in the art and are contemplated as within the scope of the invention. For example, the poloxamer component may be dissolved in an acrylic acid/water mixture instead of pure monomer. It may be desirable to remove unreacted monomer and/or free poloxamer from the resultant polymer network. This may be accomplished using conventional techniques, such as, by way of example, dialysis or sohxlet extraction.

Without intending to be bound by a particular mechanism or structure, the following scheme represents a possible chemical mechanism for the formation of the system here described. These mechanisms are presented by way of explanation and are no way limiting of the invention. It is contemplated that these or other mechanistic routes may in fact occur in the formation of the polymer network of the present invention.

I. InitiationII. Hydrogen AbstractionIII. Chain TransferIV. PropagationV. Side Chain Branching Off AA BackboneVI. AA Branching off Poloxamer BackboneVII. Homogenous TerminationVIII. Heterogenous Termination with bonding of Pluronic to PAA

The scheme for bonding of poloxamer to acrylic acid may involve initiation (eq 1), hydrogen abstraction from the propylene or ethylene moiety of the poloxamer (eq 3), and attachment to acrylic acid via addition across the unsaturated bond (eq 10). Propagation (eq 8) leads to the final PAA.

Alternatively, the mechanism may proceed by initiation according to eqs. (1) and (2). propagation to form PAA (eq.8), a chain transfer reaction to generate a reactive poloxamer moiety (eq. 5), followed by addition of the reactive poloxamer

moiety to the unsaturated bond of acrylic acid (eq. 10) and subsequent propagation of the PAA chain.

Thus the polymer network may include a plurality of poly(acrylic acid)) units bonded to a single poloxamer unit or, alternatively, a plurality of poloxamer units bound to a single PAA backbone. Combinations of these alternatives are also a possibility.

Reverse phase polymerization may be used to prepare polymer network beads by dispersion of the poloxamer and acrylic acid monomer mixture in a nonpolar solvent such as hexane or heptane. The aggregating polymer/monomer solution is dispersed with agitation in the nonpolar solvent in order to suspend droplets of the solution. Polymerization of the monomer is initiated by conventional means (i.e., addition of a initiator or irradiation) in order to polymerize the monomer and form responsive polymer network beads. See, U.S.S.N. 08/276,532 filed July 18, 1995 and entitled "Useful Responsive Polymer Gel Beads" for further information on the preparation of polymer gel beads, herein incorporated by reference. Such a method may be particularly desirable to provide a heat sink for the heat generated in the exothermic polymerization reaction.

The polymer network complexes and aqueous gelling solutions of the present invention may be understood with reference to the following examples, which are provided for the purposes of illustration and which are in no way limiting of the invention.

Example 1 This example describes the synthesis of a polymer network and an aqueous responsive polymer network solution prepared using a triblock polymer of poly(ethylene glycol) and poly(propylene glycol), Pluronic® F27 polyol, and poly(acrylic acid). This example also characterizes the gelation and the physical properties of the resultant polymer network.

Synthesis. Block copolymer of poly(propylene glycol) (PPG) and poly(ethylene glycol) (PEG) having triad ABA structure  $(PEG)_A(PPG)_B(PEG)_A$  (Pluronic® F127 NF polyol, Poloxamer 407 NF polyol, where "F" means Flakes, "12" means 12X300=3600 - MW of the PPG section of the block copolymer, "7" PEG in

the copolymer is 70 wt%, and nominal molecular weight is 12,600) from BASF (3.0 g) was dissolved in 3.0 g acrylic acid (Aldrich). This represents a substantially 1:1 weight ratio of Pluronic® F127 polyol and poly(acrylic acid). The solution was deaerated by N<sub>2</sub> bubbling for 0.5 h and following addition of 100 ml of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70 °C for 16 h resulting in a transparent polymer.

Viscosity measurements. A known amount of the resultant polymer was suspended in 100 ml deionized water into which NaOH was added. Following swelling for 3 days while stirring, the pH of the resulting fine suspension was adjusted to 7. Samples of 15 ml each were taken, and pH in each vial was adjusted to desired value by addition of 1 M HCl or NaOH. Samples were then kept overnight and their viscosities were measured at different temperatures using Brookfield viscometer using either an SC4-18 or an SC4-25 spindle.

A control experiment was done with a physical blend of Pluronic® F127 polyol and poly(acrylic acid) (MW 450,000) available from Aldrich. Pluronic® F127 polyol and poly(acrylic acid) were dissolved together in deionized water at 1 wt% total polymer concentration and the resultant solution was adjusted to pH 7, stirred and kept in refrigerator. The responsiveness of the polymer network composition and the physical blend to temperature and pH is illustrated in Figs. 1, 11 and 12. Figs. 1 and 2 clearly demonstrate that the synthetic route outlined above resulted in a polymer network system that is sensitive to pH and temperature of the environment. Note that the liquid-gel transition is very sharp, occurring over a very small temperature change or pH (see, Figure 11). Figure 12 is a viscosity vs. temperature graph comparing the gelling characteristics of the responsive polymer network composition and the physical blend. The blend prepared by physically mixing of the triblock PEG/PPG/PEG polymer and poly(acrylic acid) did not exhibit viscosifying effect either as a function of temperature or pH.

It was generally observed that 0.5-5 wt% polymer network compositions made of Pluronic® F127 polyol and poly(acrylic acid) viscosify at temperatures of around 30 °C and higher if pH is adjusted to 6 or higher. The gelling effect was observed in

polymer network compositions standing 3 months or longer. Repeated heating and cooling of responsive polymer network compositions did not cause deterioration of the polymer network or the gelling effect. Solutions of either Pluronic® F127 polyol or poly(acrylic acid) (1-5 w% in water, adjusted to pH 6 or higher) or physical blends of the two lacked the reverse thermal gelling effects found for polymer network compositions.

Example 2. This example describes a standard operating procedure for the manufacture of the reversible gelling polymer network.

The procedure is based upon a 50 liter production. A NaOH solution was prepared by dissolving 131.8 g NaOH pellets in 131.8 mL DI water (50% solution). The NaOH was allowed to dissolve completely. The NaOH solution will be used to convert a percentage of the acrylic acid to sodium acrylate in situ. Acrylic acid monomer ( 4 kg) is charged into a monomer feed tank and agitated at 250 rpm. NaOH is added slowly. The precipitate formed as the acrylic acid is neutralized to sodium acrylate is allowed to dissolve. Pluronic® F127 (3.5 kg) is slowly added to the monomer feed tank. Pluronic® F127 is dissolved under continued agitation. Norpar 12 (a refined C-12 alkane) is added to the reaction vessel (37 L). The mixture is agitated at 100 rpm. Stabilizer solution of Ganex V-126 is prepared in 2L Norpar 12 and added to the reactor under agitation.

A reaction vessel was degassed using a nitrogen sparge introduced from the bottom of reactor and was continued throughout the reaction. Initiator (13.63 g Lauryl peroxide and 4.23 g Vazo 52 in 0.7 kg acrylic acid monomer) is introduced into the monomer solution. The monomer solution was transferred to the reaction vessel. Agitation was increased to 150 rpm. Nitrogen sparging continued for an additional 20 minutes and then heating began. Heating began at a rate of 0.5-1.0 °C/min up to 75 °C. The reaction began to exotherm at about 45-50 °C and is allowed to continue without cooling until a maximum is reached. It is then cooled to 75 °C using forced cooling. The reaction continued for 12 hours and was then cooled to 35 °C. The slurry was transferred into pails and the polymer beads were allowed to settle.

The slurry was filtered through Buchner Funnels with filter paper (11 µm pore

size) until the bulk of the Norpar had been removed from the beads. The beads were washed three times with heptane. The filtered beads were transferred to a Pyrex drying tray and spread on the tray in a uniform layer. The beads were dried under vacuum for 4 hours at 40-50 °C. The dried beads were analyzed as follows.

5        Elemental analysis. The elemental analysis was performed by Quantitative Technologies, Inc., Whitehouse, NJ using a Perkin Elmer 2400 CHN Elemental Analyzer. Analysis provided C (52.49%), H (7.50%), N (< 0.05%), the balance assumed to be oxygen (39.96%).

10        Thermal Gravimetric Analysis (TGA). The TGA method was performed by Massachusetts Material Research, Inc., West Boylston, MA using a Dupont TGA model 295. The assay was run using a temperature ramp from 30 to 500 °C/min. The resolution for the system was set to 4 (1.0 °C/min for all slope changes). The data was analyzed using the first derivative of the curve and using maxima and minima to mark transitions. The moisture content was also calculated in this manner. The first  
15        derivative yielded three maxima. The first transition (moisture) was 3.0% by weight. the second transition was 14.0% by weight and the third was 67.02% by weight. Residue (15.98% remained).

20        Molecular weight determination by gel permeation chromatography (GPC). The molecular weight was determined by GPC on a Hewlet Packard 1100 Liquid Chromatography system with a Viscotech T60 Triple Detector system. Three Waters Ultrahydrogel columns, 1000, 500 and 250 Å, were used for the separation. The  
25        mobile phase was 0.1M NaNO<sub>3</sub> and 0.01M K<sub>2</sub>HPO<sub>4</sub> salt solution, pH adjusted with phosphoric acid to a pH of 8.0 ± 0.1. The flow rate for the separation was 0.9 mL/min. The column temperature was maintained at 15 °C. The injection volume for the assay was 50 µL. A PEG molecular weight standard of 23,000 Daltons was used to align the detectors. The result for the assay were:

$M_n$ : 341,700 Daltons

$M_p$ : 1,607,000 Daltons

$M_w$ : 2,996,000 Daltons

30        Free poloxamer determination by GPC. The amount of free (unbound)

poloxamer in the polymer matrix was determined using the above GPC method and comparing the poloxamer peaks to that of a standard poloxamer solution. The typical result is approximately 18-22% free poloxamer by weight.

5 The effect of both the bonded and non-bonded poloxamer on the gelation properties of the responsive polymer network has been determined by extraction of the non-bonded poloxamer from the material. Such extraction studies have established that the graft co-polymer alone exhibits the characteristic reverse thermal gelation of the composition; however, the presence of non-bonded poloxamer component modulates the gelation process. The non-bonded poloxamer component  
10 can affect the temperature of transition (from liquid to gel) and the degree of transition and assists in a more controlled and reproducible transition.

Bound poloxamer determination by ethylene oxide (EO) titration. The EO titration was performed as follows. A 5 gm sample of the product polymer was extracted in dichloroethane for three hours at reflux temperatures. The solid is  
15 removed and dried under a vacuum for 12 hours at room temperature. The dry material is then analyzed using ASTM method D 2959-95, "Standard Test Method for Ethylene Oxide Content". The amount of EO in the sample is related to the amount of poloxamer bound to the polymer. The typical result is approximately 15 % by weight of EO.

20 The relative amount of free poloxamer may be varied dependent upon the relative proportions of starting materials and the method of polymerization. Although the residual solids presumably contain only poloxamer which is bonded to the poly(acrylic acid), i.e., a graft co-polymer, the material still shows strong viscosification when it is neutralized and dissolved in water. However, the  
25 temperature of viscosification is increased substantially and the degree of viscosification per gram of total solids is increased by removal of free poloxamer. Thus, the free poloxamer plays a role in modifying the extent and temperature of viscosification. The poloxamer undergoes conformational changes and changes to the critical micelle concentration as a function of temperature. The poloxamer will  
30 change from an open, non-aggregated form to a micellular, aggregated form with



changes in temperature.

Residual acrylic monomer determination by gas chromatography (GC). The residual acrylic acid monomer was determined by GC analysis using a Hewlett Packard GC 5890A, using a HP-FFDAP-TPA 10 m x 0.53 mm x 1µm column. The sample was extracted and run in methanol. Using an internal standard ratio, the sample was compared to a one point calibration. The typical results for this assay were below 70 ppm acrylic acid monomer.

Residual Norpar solvent by GC. The residual Norpar in the sample was determined by GC using the above method and comparing the Norpar peaks to that of a standard. The typical results were below 1.5 wt%.

UV-vis spectrum. Optical clarity data of UV-vis spectrophotometer was obtained. A 1.0% solution in water was prepared and measured at 420 nm. Transmittance (%) was typically greater than 90%.

Differential scanning calorimetry (DSC). The DSC was performed by Massachusetts Material Research, Inc., West Boylston, MA using a temperature ramp from 30 to 350 °C at 5 °C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The assay yielded one endothermic event at 265 °C, typically 270 J/g.

Examples 3-9. This example describes the synthesis of a several reversible thermal gelling polymer network prepared using a variety of poloxamers and poly(acrylic acid). The gelation and the physical properties of the resultant polymer network compositions are reported in Table 2.

Table 2.

example	poloxamer	poloxamer composition	polox- amer: PAA	trans. temp.	comments
3	Pluronic® F88 Prill polyol	2400 MW PPG; 80 wt% PEG; nominal MW 11,400	1:1	48 °C	viscosity response curve shown in Figure 13
4	Pluronic® F127 NF polyol	3600 MW PPG; 70 wt% PEG; nominal MW 12,600	1:1	30 °C	pentaerythritol triallyl ether crosslink agent used
5	Pluronic® P104 polyol	3000 MW PPG; 40 wt% PEG; nominal MW 5,900	1:1	28 °C	viscosity response curve shown in Figure 14
6	Pluronic® P123 polyol	3600 MW PPG; 30 wt% PEG; nominal MW 5,750	1:1	25 °C	viscosity response curve shown in Figure 15
7	Pluronic® F127/Pluronic® F108 polyol blend (1:1)	as above	1:1.7	42 °C	polymer solid formed, dried; resolubilized in neutralizing solution
8	Pluronic® F88 polyol	as above	1:1.7	80 °C	polymer solid formed, dried; resolubilized in neutralizing solution
9	Pluronic® F127/Pluronic® F88 polyol blend (1:1)	as above	1:1.7	85 °C	polymer solid formed, dried; resolubilized in neutralizing solution

Example 10. The following example demonstrates the effect of hydrophilic/hydrophobic ratio on the gelling temperature. Polymer network compositions were prepared from the following poloxamers shown in Table 3.

Table 3. Composition of poloxamers investigated.

triblock polyol polymer composition	MW of PPG block	wt% of PEG block
P103 (PEG) <sub>37</sub> (PPG) <sub>56</sub> (PEG) <sub>37</sub>	3250	50
P104 (PEG) <sub>25</sub> (PPG) <sub>56</sub> (PEG) <sub>25</sub>	3250	40
P105 (PEG) <sub>16</sub> (PPG) <sub>56</sub> (PEG) <sub>16</sub>	3250	30

Table 3 shows that in this series, the fraction of PEG is reduced when the molecular weight of the PPG block is kept constant. Linse (*Macromol.* 26:4437-4449 (1993)) report phase diagrams for these copolymers in water were calculated and it was shown that two-phase boundaries corresponding to the beginning of aggregation are almost unaffected by the molecular mass, given a constant PEG/PPG ratio, whereas these boundaries shifted to lower temperature as the PEG content of the polymer is reduced at constant mass. The strong dependence of the PEG/PPG ratio is a consequence of the differing solubilities of PEG and PPG in water at the elevated temperatures. Thus one would suppose that aggregation that causes viscosification in the responsive polymer network composition should shift to lower temperature as PEG fraction decreases.

The poloxamer (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 20 min. and following addition of the 100 :1 of freshly prepared saturated solution of ammonium persulfate in deionized water was kept at 70°C for 16 h resulting in a strong whitish polymer. A sample of the polymer obtained (0.4 g) was suspended in 40 ml deionized water into which NaOH was added. Suspended responsive polymer network particles were allowed to dissolve under constant stirring. The resulting 1 wt% polymer network solutions were subjected to the viscosity measurement at shear rate of 132 or 13.2 sec<sup>-1</sup> using a SC4-18 spindle. It can be seen from Figure 16 that, firstly, viscosity of the 1 wt%

responsive polymer network solutions before viscosification (at 20-24°C) decreases in the series (PEG)<sub>37</sub>(PPG)<sub>56</sub>(PEG)<sub>37</sub>(F103) > (PEG)<sub>25</sub>(PPG)<sub>56</sub>(PEG)<sub>25</sub>(F104) > (PEG)<sub>16</sub>(PPG)<sub>56</sub>(PEG)<sub>16</sub>(F105) and, secondly, the temperature at which gelation shifts from about 45°C for (PEG)<sub>37</sub>(PPG)<sub>56</sub>(PEG)<sub>37</sub> to about 35°C for (PEG)<sub>25</sub>(PPG)<sub>56</sub>(PEG)<sub>25</sub> and (PEG)<sub>16</sub>(PPG)<sub>56</sub>(PEG)<sub>16</sub>. Both results are in excellent agreement with the theory set forth in Linse.

Example 11. The following example is related to release of and active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein hemoglobin from poloxamer:poly(acrylic acid) polymer network is described.

Synthesis. Pluronic® F127 (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 0.5 h and following addition of 100 Fl of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer. The resultant responsive polymer network obtained (5 g) was suspended in 95 ml deionized water into which NaOH was added. The resulting suspension was allowed to swell for 7 days.

Hemoglobin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 0.25 mg/ml solution of human hemoglobin (Sigma) in deionized water adjusted to pH 8. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the hemoglobin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 0.25 mg/ml hemoglobin solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples of the receiver phase was withdrawn from time to time and their absorbance was measured spectrophotometrically at 400 nm.

To calculate hemoglobin concentrations, corresponding calibration curves (absorbance in PBS versus hemoglobin concentration) were generated. The results of the kinetic experiment are presented in Figure 17. It can be seen that the rate of hemoglobin release from the polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in the polymer network at elevated temperatures (see Figure 1). The protein released from the polymer network composition still retained its native structure, as was determined by comparison of uv-vis spectra of release hemoglobin and natural hemoglobin.

Example 12. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein lysozyme from a polymer network is reported.

Lysozyme loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 1 mg/ml solution of chicken egg-white lysozyme (Sigma) and 1.5 mg/ml sodium dodecyl sulfate (Aldrich) in deionized water adjusted to pH 8.5. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the lysozyme-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 1 mg/ml lysozyme solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples were withdrawn and their absorbance measured spectrophotometrically at 280 nm. A calibration curve was prepared for lysozyme concentration ranging from 0 mg/ml to 0.5 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 18. It can be seen that the rate of lysozyme release from the responsive polymer network composition was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

In order to demonstrate the retention of the enzymatic activity of lysozyme, the lysozyme released from the responsive polymer network composition was assayed using *Micrococcus lysodeikticus* cells and compared to that of original lysozyme. The enzymatic activity of lysozyme was the same, within the error of the assay (15%), as that of the original lysozyme. Control without lysozyme in presence of sodium dodecyl sulfate did not show any appreciable lysis of the cells.

Example 13. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of insulin from a responsive polymer network composition is reported.

Insulin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 5 mg/ml solution of bovine  $\text{Zn}^{2+}$ -insulin (Sigma) in deionized water adjusted to pH 7. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the insulin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4); respectively. In the control experiment, the feed phase was made of 1 g of 5 mg/ml insulin solution. After the feed solution had been loaded into the cell, the timing commenced. Samples were withdrawn and their absorbance was measured spectrophotometrically at 280 nm. A calibration curve was prepared for insulin concentration ranging from 0 mg/ml to 1.25 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 19. The rate of insulin release from responsive polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

Example 14. This example demonstrates the preparation of a sterile reversibly gelling polymer network aqueous composition and the stability of the composition to sterilization. The polymer network is prepared as described in Example 1, except that

the composition is prepared at 2 wt% Pluronic® F127 polyol/poly(acrylic acid). After dissolution of the 2 wt% polymer network in water, the viscosity is measured. The composition then is sterilized by autoclaving at 121°C, 16 psi for 30 minutes. Viscosity is determined after sterilization. The corresponding curves for viscosity (a) before and (b) after sterilization are shown in Figure 20 and establish that minimal change in the viscosity profile of the material has occurred with sterilization.

Examples 15-30. These examples show additives which may be used to affect the transition temperature overall viscosification of the polymer network composition.

A 1 wt% polymer network was prepared in deionized water at pH 7 in which a variety of additives were included in the composition. The effect of the additive was determined by generation of a Brookfield viscosification curve. Results are reported in Table 4.

Table 4.

Example No.	Additive (wt%)	Effect of additive on:	
		transition temp. (°C)	final viscosity (% change)
15	1,2-methyl pyrrolidone (5)	I (1.8)	N
16	Rhodapex CO-436 (2)	I (1.6)	N
17	Dow Corning 190 (2)	I (5)	I (150)
18	isopropyl alcohol (0.5)	I (3.1)	I (45)
19	Pluronic® L122 (1)	D (4.4)	D (13)
20	Pluronic® F88 (1)	N	I (41)
21	Tween 80 (0.5)	N	I (18)
22	Germaben® II (1)	D (9)	I (100)
23	Iconol NP-6 (1)	D (9)	I (500)
24	Plurafac C-17 (0.5)	I (5.2)	D (36)
25	Dow Corning 193 (0.75)	I (4.1)	D (12)
26	glycerin (5)	D (2)	N
27	UC 50-HB- 170/EO/PO random copolymer (0.5)	N	N
28	PVP K15 (1)	N	N
29	MAPTAC (1)	N	D (8)
30	potassium chloride (0.25)	N	D (34)

I = increase; D = decrease; and N = no change



Example 31. Because of the surfactant nature of the polymer network composition coupled with the gelation effect of the polymer network composition, it is possible to prepare formulation which are 100% water-based, but which are lubricous and thick.

5        Formulations including a nonionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 5.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Emulsifying Wax NF <sup>1</sup>	2.5
Mineral Oil	5.0

15        <sup>1</sup> Polowax available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a nonionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

20        Formulations including a cationic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 6.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Benentrimonium Methosulfate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

30        <sup>1</sup> Incroquat Behenyl TMS available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount

of all ingredients is added and allowed to mix to homogeneity. This formulation contains a cationic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Formulations including an anionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 7.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Cetearyl Phosphate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup> Crodafos CES available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a anionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Example 32. Acne Medication: An oil-free, clear, anti-acne treatment is made by combining the following ingredients utilizing conventional mixing techniques:

Table 8.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network prepared as in Example 1	20.0
Glycerin USP	5.0
Salicylic Acid	2.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
USP Purified Water	72.2

<sup>1</sup> Germaben®II available from Sutton Laboratories

To one vessel, equipped with a Lightnin' Mixer with a 3 blade paddle prop.

the full amount of USP Purified Water to 100% w/w is added. While maintaining the temperature, with moderate to vigorous mixing, the formula amount of Disodium EDTA, Citric Acid, DL-Panthenol, Glycerin, Salicylic Acid, and Germaben® II is added. These materials are allowed to dissolve at 50°C. After dissolution, the vessel  
5 is then cooled to 20°C. To another vessel, equipped with a high efficiency homogenizer, the formula amount of responsive polymer network is added. The responsive polymer network vessel is then cooled to 4°C. After cooling, while vigorously homogenizing, the contents of the first vessel is added to the second vessel, and allowed to mix to homogeneity.

10 The composition displays a flowable clear jelly appearance with excellent spreadability and absorption characteristics at room temperature, and after heating the formulation to 32°C, the composition thickens to a gel-like consistency.

Example 33. (a) Oil-free Moisturizer (formulation I): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional  
15 mixing techniques:

Table 9.

Ingredient	% w/w
10% wt 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
PPG-2 Myristyl Ether Propionate	3.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
Citric Acid	0.01
USP Purified Water	71.19

<sup>1</sup> Germaben® II available from Sutton Laboratories

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The viscosity vs. temperature curve is shown in Figure 21 and demonstrates that addition of adjuvants to the composition significantly enhances the responsive polymer network maximum viscosity (> 900,000 cps). The use of the poloxamer:poly(acrylic acid) polymer network in the formulation also imparts a unique viscosification effect after application to the skin, which is not evident in typical commercial O/W emulsion formulations (See, Figure 21b).

(b) Oil-free Moisturizer (formulation II): An oil-free, lubricious moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 10.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	5.0
Carbopol 980	1.0
D-panthenol, propylene glycol	1.0
Preservative	1.0
Hydrolyzed protein (and) hyaluronic acid	0.5
Sodium hydroxide	0.2
USP Purified Water	90

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to 26°C, the composition thickens to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 34. Sunscreen Lotion. An oil-free, lubricious sunscreen lotion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 11.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	8.0
Carbopol 980	1.0
Parsol MCX	7.0
Myristyl Ether Propionate	5.0
Preservative	1.0
Cyclomethicone	1.0
Sodium hydroxide	0.2
USP Purified Water	74

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 35. Facial mask. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 12.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	1.0
Polyvinyl alcohol	6.0
Polyvinylpyrrolidone (20%)	5.0
D-panthenol, propylene glycol	1.25
Propylene glycol	1.25
USP Purified Water	85.5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Facial toner. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 13.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	0.01
Hydroxyethyl ceryldimonium phosphate	1.00
PEG-40 hydrogenated caster oil	2.00
D-panthenol, propylene glycol	0.50
Glycerin	2.00
Witch hazel extract	5.00
USP Purified Water	88.49

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Solubilization studies of model hydrophobic agents in the poloxamer: poly(acrylic acid) polymer network: estradiol and progesterone. This example is presented to demonstrate the solubilization of a hydrophobic agent in the polymeric network. Progesterone and estradiol were used as the hydrophobic agents in this model solubilization study.

Acrylic acid (99%), fluorescein (98%),  $\beta$ -estradiol (98%), and progesterone (98%) were all obtained from Aldrich and used as received. Pluronic® F127 NF was obtained from BASF. Poly(oxyethylene-b-oxypropylene-b-oxyethylene)-g-poly(acrylic acid) copolymers (responsive polymer network) were synthesized by free-radical polymerization of acrylic acid in the presence of poloxamer as described above. The polymer network copolymers discussed here were composed of about 1:1 ratio of PAA to poloxamer. The rheological properties of polymer network were assessed using LVDV-II+ and RVDV-II+ Brookfield viscometers. The microscopic light scattering of 21 nm poly(styrene) latex particles in deionized water and 1 w% reversibly gelling polymer network was measured using He-Ne laser as described previously (See, Matsuo, E.S., Orkisz, M., Sun, S.-T., Li, Y., Tanaka, T., Macromolecules, 1994, 27, 6791). The solubility of fluorescein and hormones in aqueous solutions was measured by the equilibration of excess solubilize with the corresponding solution following removal of undissolved species by centrifugation and filtration. Hydrophobic agents were assayed spectrophotometrically at 240 (progesterone) or 280 nm (estradiol), or by using 70/30 w/w H<sub>2</sub>SO<sub>4</sub>/MeOH (Tsilifonis-Chafetz reagent). In vitro hormone release studies were conducted using thermostatted, vertical Franz cells. Spunbonded polypropylene microfilters (micron retention, 15-20) were used as a membrane separating feed and receiver phases in



Franz cells. The responsive polymer network, water, ethanol, and 20% PEG in water were observed to wet the membrane. The receiver solutions consisted of 20 w% PEG in water (pH 7) and were stirred by magnetic bars. The feed phases composed of responsive polymer network were loaded with either estradiol or progesterone. Each hormone was dissolved in ethanol and the resulting solution was added into the responsive polymer network.

Equilibrium solubility vs. temperature plots for estradiol and progesterone (partition coefficient octanol/water (P) 7200 and 5888, respectively, in aqueous solutions of Pluronic® F127 polyol and responsive polymer network are presented in Figure 22. It can be seen that increasing temperature and concentration (C) of polymers in the solution raises the amount of the hormone dissolved. In Figure 22a, vertical lines represent critical micellar temperatures (CMT) for corresponding Pluronic F127 polyol solutions. It is interesting to note that the slope of the solubility-temperature plots increased as temperature reached CMT, indicating that solubilization in the Pluronic solutions was predominantly due to the formation of micelles. Similar trend was observed in the responsive polymer network solutions. The S values in 5% aqueous solutions of branched PAA did not exceed 15 and 40  $\mu\text{g/mL}$  at 60 °C for estradiol and progesterone, respectively. The solubility values found for responsive polymer network were the same as S in parent Pluronic solutions of equivalent concentrations. Therefore, it may be suggested that solubilization behaviors of the responsive polymer network are governed by the properties of the poloxamer incorporated into it. Thermodynamic parameters of the solubilization process with responsive polymer network were calculated using the same approximations as in the micellar solubilization with Pluronic polyols. See, Saito, Y., Kondo, Y., Abe, M., Sato, T., Chem.Pharm.Bull., 1994, 42, 1348. Namely, partition coefficient P was estimated from equilibrium solubilities of estradiol in responsive polymer network and water:

$$P = S_{\text{SH}}/S_{\text{W}} \quad (13)$$

by extrapolating the solubility plots of the steroid in Figure 22 to 100 % responsive polymer network. Using P values obtained from data in Figure 23, we calculated the

standard free energy change ( $\Delta G$ ), standard enthalpy of solubilization ( $\Delta H$ ), and standard entropy of solubilization ( $\Delta S$ ) using the following expressions:

$$\Delta G = -RT \ln P; \Delta H = -R \Delta \ln P / \Delta(1/T); \Delta S = (\Delta H - \Delta G)/T \quad (14)$$

Thermodynamic parameters obtained along with P values are given in Table 13.

- 5 Apparent partition coefficients and thermodynamic parameters for solubilization of estradiol by responsive polymer network.

Table 13.

T, K	P=SSH/S	$\Delta G$ kJ/mol	$\Delta H$ kJ/mol	$\Delta S$ J/mol
277	490	-14.3	4.72	68.6
293	520	-15.2		52.0
310	660	-16.7		53.9
323	660	-17.4		54.0
333	660	-18.0		54.0

Negative  $\Delta G$  values indicate spontaneous solubilization at all temperatures, whereas positive  $\Delta H$  shows that the solubilization was endothermic, similar to the solubilization of estriol, as well as indomethacin, by the poloxamer. Notably,  $\Delta S$  of solubilization was always positive, suggesting that the more ordered water molecules surrounding hydrophobic estradiol molecules moved to the less ordered bulk phase when the estradiol was transferred to the hydrophobic core of PPG segments in responsive polymer network. The aggregation of the PPG segments at elevated temperatures provides not only temporary cross-linking in the gel, but also a thermodynamically "friendly" environment for the hydrophobic drugs. Indeed, one can express the free energy of formation of the aggregate core-water interface in responsive polymer network as:

$$\Delta G = [\sigma P_w(1 - \phi) + \sigma W_D \phi](4\pi R^2/n) \quad (15)$$

where  $\sigma P_w$  and  $\sigma W_D$  are the interfacial tensions between pure PPO polymer and water and between water and the drug, respectively;  $\phi$  is the volume fraction of the drug within PPO core; R is the effective radius of the core, and n is the aggregation number.

Equation (3) shows that solubilization of a hydrophobic drug of high  $\sigma_{WD}$  should increase the stability of the aggregate. The solubilization process was found to decrease the critical micellization concentration and substantially increase the micellar core radius in Pluronic surfactants (Hurter, P.N. *et al.*, "In Solubilization in Surfactant Aggregates", Christian, S.D., Ed., Marcel Dekker, New York, 1995). A similar trend is indicated by the lowering the onset of gelation of the responsive polymer network upon solubilization of fluorescein (LogP 2.1) (Figure 24). The solubilization of hydrophobic drugs by responsive polymer network, analogous to the micellar solubilization of drugs by poloxamer, suggests that the responsive polymer network can be an effective vehicle in drug delivery.

Our *in vitro* study of hormone release from responsive polymer network shows an increase in the initial transport rate with either decreasing total polymer concentration in the formulation or decreasing temperature (Figure 25). These effects are related to the changes in macroscopic viscosity of the responsive polymer network, which erodes more rapidly from the feed phase through the membrane into the receiver compartment as the viscosity decreases (Figure 26). The degree of the responsive polymer network erosion was measured by weighing hormone-loaded responsive polymer network before and after kinetic experiment.

Figure 27 shows that the relative amount of progesterone penetrating into the receiver phase decreased 4-fold with the increase of total polymer concentration, whereas the total relative amount of progesterone stayed almost constant as total polymer concentration in the responsive polymer network increased. This result shows the existence of two routes of transport of hydrophobic drugs in our model system. Firstly, the drug incorporated into aggregates within the responsive polymer network system can flow through the membrane along with the erosion of the responsive polymer network; secondly, the drug not associated with the responsive polymer network aggregates can diffuse out of the responsive polymer network in the feed phase. The second process should not be related to the viscosity of the responsive polymer network. Indeed, the dynamic light scattering experiment shows no dramatic change of diffusivity of poly(styrene) latex particles in the responsive polymer

network as temperature rises thereby increasing macroscopic viscosity more than 10-fold (Figure 28). This result indicates that the viscosity of the responsive polymer network is essentially unaffected on the microscopic scale.

5           Appendix A attached.

## APPENDIX A

# Cosmetic Bench Reference

## Function Definitions

- Abrasive:** abrades, smoothes, polishes
- Absorbent powder:** takes up liquids, sponge-like action
- Absorption base:** forms water-in-oil emulsions
- Acidulent:** acidifies, lowers pH, neutralizes alkalis
- Amphoteric:** capable of reacting chemically either as an acid or a base; amphoteric surfactants are compatible with anionic and cationic surfactants
- Analgesic:** relieves pain
- Antacid:** neutralizes stomach acidity
- Antibacterial:** destroys/inhibits the growth/reproduction of bacteria
- Anti-caking:** prevents or retards caking of powders; keeps powders free-flowing
- Anti-dandruff:** retards or eliminates dandruff
- Antifoam:** suppresses foam during mixing
- Anti-inflammatory:** reduces, suppresses, counteracts inflammation
- Anti-irritant:** reduces, suppresses or prevents irritation
- Antimicrobial:** destroys, inhibits or suppresses the growth of microorganisms
- Antioxidant:** inhibits oxidation and rancidity
- Antiperspirant:** reduces or inhibits perspiration
- Antipruritic:** reduces or prevents itching
- Antiseptic:** inhibits the growth of microorganisms on the skin or on living tissue
- Antistat:** reduces static by neutralizing electrical charge on a surface
- Astringent:** contracts organic tissue after application
- Binder:** promotes cohesion of powders
- Bleaching agent:** lightens color, oxidizing agent
- Botanical:** natural plant derivative
- Buffer:** helps maintain original pH (acidity or basicity) of a preparation
- Carrier:** a vehicle or base used for a preparation
- Chelate:** form a complex with trace-metal impurities, usually calcium or iron
- Colorant:** adds color, may be a soluble dye or an insoluble pigment
- Conditioner:** improves condition of skin and hair
- Coupling agent:** aids in solubilization or emulsification of incompatible components
- Decolorant:** removes color by adsorption, bleaching or oxidation
- Denaturant:** used to denature ethyl alcohol
- Dental powder:** powdered dentifrice
- Deodorant:** destroys, masks or inhibits formation of unpleasant odors
- Depilatory:** removes hair chemically
- Detergent:** a surface-active agent (surfactant) that cleans by emulsifying oils and suspends particulate soil
- Disinfectant:** destroys pathogenic microorganisms
- Dispersant:** promotes the formation and stabilization of a dispersion or suspension
- Dye stabilizer:** see Stabilizer
- Emollient:** softens, smoothes skin
- Emulsifier:** a surface-active agent (surfactant) that promotes the formation of water-in-oil or oil-in-water emulsions
- Enzymes:** complex proteins produced by living cells that catalyze biochemical reactions at body temperature
- Fiber:** strands of natural or synthetic polymers; for instance, cotton, wool, silk, nylon, polyester
- Film former:** solution of a polymer that forms films when the solvent evaporates after application to a surface
- Fixative:** fixes or sets perfumes; retards evaporation; promotes longer lasting aroma
- Flavor:** imparts a characteristic taste (and aroma) to edible foods and drinks; sometimes used in lip products
- Foam booster:** enhances quality and quantity of lather of shampoos
- Foamer:** a surface-active agent (surfactant) that produces foam; an emulsion of air-in-water
- Foam stabilizer:** see Foam booster
- Fungicide:** inhibits or destroys growth of fungi
- Gellant:** a gelling agent; forms gels; includes a wide variety of materials such as polymers, clays and soaps
- Glosser:** furnishes a surface luster or brightness; usually used in lip or hair products
- Hair colorant:** see Colorant
- Hair conditioner:** see Conditioner
- Hair dye:** imparts a new permanent or semi-permanent color to hair
- Hair-set polymer:** polymer and/or resins used to maintain desired hair shape
- Hair-set resin:** see Hair-set polymer
- Hair waving:** see Reducing agent and Neutralizer
- Humectant:** absorbs, holds and retains moisture
- Hydrotrope:** enhances water solubility
- Intermediate:** basic chemicals which are chemically modified to obtain the desired function
- Lathering agent:** a surface active agent (surfactant) that forms a foam or lather on mixing with air in solution; see also Foamer
- Lubricant:** reduces friction, smoothes, adds slip
- Moisture barrier:** retards passage of moisture or water
- Moisturizer:** aids in increasing the moisture content of the skin through humectant or barrier action
- Neutralizer:** an oxidizing agent used in hair waving that stops the action of the reducing agent and re-establishes the disulfide linkages in hair
- Oil absorbent:** see Absorbent powder
- Ointment base:** an anhydrous mixture of oleaginous components used as a vehicle for medicaments
- Opacifier:** opacifies clear liquids or solids
- Oxidant:** oxidizing agent, neutralizes reducing agents, bleaching agent
- Pearlant:** imparts a pearlescent texture and luster
- Perfume solvent:** see Solvent and Solubilizer

**Peroxide stabilizer:** see Stabilizer

**Pigment:** a finely powdered insoluble substance used to impart color, luster or opacity

**Plasticizer:** plasticizes (makes more flexible) polymeric films or fibers

**Polish:** smoothness; adds gloss and luster

**Polymer:** a very high molecular weight compound consisting of repeating structural units

**Powder:** a solid in the form of fine particles

**Preservative:** protects products from spoilage by microorganisms

**Propellant:** pressurized gas in a container used to expel the contents when pressure is released by opening a valve

**Protein:** naturally occurring complex combinations of amino acids

**Reducing agent:** reduces a chemical compound usually by donating electrons; neutralizes oxidizing agents

**Refatting agent:** adds oils materials to the surface of substrates, e.g., skin and hair

**Resin:** nonvolatile solid or semisolid organic substances obtained from plants as exudates to prepared by polymerization of simple molecules

**Sequestrant:** forms coordination complexes with multivalent positive ions

**Silicone:** polymeric organic silicon compounds which are water resistant

**Skin protectant:** protects skin from environmental

**Solubilizer:** solubilizes, usually into aqueous vehicles, normally insoluble materials, such as fragrances, flavors, oils, etc.

**Solvent:** usually liquids capable of dissolving other substances

**Stabilizer:** added to stabilize emulsions and/or suspensions

**Stimulant:** produces a temporary increase in the functional activity of an organism or any of its parts

**Surfactant (surface-active agent):** lowers surface tension between two or more incompatible phases; soaps, detergents, wetting agents, solubilizing agents and emulsifying agents are typical surfactants; surfactants are classified as anionic, cationic, nonionic and amphoteric; anionic surfactants are negatively charged, cationic surfactants have no electrical charge

**Suspending agent:** keeps finely divided solid particles in suspension

**Sweetener:** sweetens to provide a more pleasant taste

**Tanning accelerator:** accelerates the tanning of skin

**Thickener:** thickens or increases viscosity/consistency

**Thixotrope:** the property of certain gels and emulsions of becoming more fluid or less viscous when shaken or stirred

**UV absorber:** used as a sunscreen and to protect preparations from degradation by UV radiation

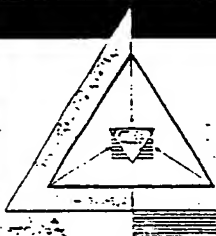
**UVA absorber:** absorbs in the range 320-400 nanometers (nm)

**UVB absorber:** absorbs in the range 290-320 nanometers (nm)

**Wax:** any of numerous substances of plant, animal or synthetic origin that contain principally esters of higher fatty acids and higher fatty alcohols; free fatty alcohols, fatty acids and hydrocarbons may also be present; waxes derived from petroleum products are mainly high-molecular-weight hydrocarbons

**Wetting agent:** a surface-active agent (surfactant) that lowers the surface and interfacial tension, facilitating the wetting of surfaces

From the Editors of *Cosmetics & Toiletries* magazine



## Hair Care

Adsorption of cationic polymers

*D. Coddard and R. Schmitt*

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Melanins - *K.C. Brown and G. Prota*

Men's hair coloring - *S. Cusperton*

Skin permeation of hair dyes - *H. Beck et al*

African-American hair - *A. Syed et al*

Ethnic hair care - *A. Syed*

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# Functions

## Abrasive

Azuki beans  
Almond (*Prunus amygdalus*) meal, shell granules  
Aluminum silicate  
Apricot (*Prunus armeniaca*) kernel powder, shells  
Hydrated silica  
Jojoba (*Buxus chinensis*) seed powder  
Luffa cylindrica  
Olive stone granules  
Oyster shell powder  
Peach (*Prunus persica*) pit powder  
Peach (*Prunus persica*) stone granules  
Polyethylene  
Polyethylene HEC granules  
Polyethylene oxidized, P. spheres  
Polystyrene  
Pumice  
Rice (*Oryza sativa*) bran  
Silica and S. colloidal  
Sodium chloride  
Walnut (*Juglans regia*) shell powder

## Absorption base

1,2,6-Hexanetriol  
Kaolin  
Petrolatum  
Rice (*Oryza sativa*) starch  
Soy (*Glycine soja*) sterol  
Zeolite

## Absorbent powder

Corn (*Zea mays*) starch  
Maltodextrin  
Nylon-12  
Oat (*Avena sativa*) bran, flour, meal  
Zeolite

## Acidulent

Acetic acid  
Citric acid  
Fumaric acid  
Glutaric acid  
Glycolic acid

Hydrochloric acid  
Lactic acid  
Nitric acid  
Phosphoric acid  
Sodium bisulfate  
Sulfuric acid  
Tartaric acid

## AHA

Apple (*Pyrus malus*) extract  
Apricot (*Prunus armeniaca*) kernel powder  
Citric acid  
Ethyl lactate  
Glycolic acid  
Lactic acid  
Malic acid  
Sodium lactate  
Tartaric acid

## Antiacne

Clays (white, yellow, red, green, pink)  
Perfluorodecalin  
Salicylic acid  
Sulfur

## Anti-aging

Basil (*Ocimum basilicum*) extract  
Carrot (*Daucus carota*) extract  
Catalpa kaempferia extract  
Ceramide 33 (liquid soy extract)  
Crataegus cuneata extract  
Eugenia jambolana extract  
Fomes fomentarius extract  
Fomistopsis pinicola extract  
Ganoderma lucidum oil  
Ginseng (*Panax ginseng*) extract  
Hyaluronic acid  
Hydrolyzed serum protein  
Hydrolyzed soy flour  
Isachne pulchella extract  
Lactoferrin  
Lady's Thistle (*Silybum marianum*) extract  
Ligusticum jeholense extract

Manne collagen  
Mushroom (*Coriolus versicolor*) extract  
Musk rose (*Rosa moschata*) oil  
Perfluorodecalin  
Quaternium-51  
Rubus thunbergii extract  
Serum protein  
Stenocalyx micalii extract  
Tricholoma matsutake extract

## Antibacterial

Ammonium iodide  
Chlorhexidine  
Chlorhexidine diacetate, C. digluconate  
Chlorhexidine dihydrochloride  
Chlorphenesin  
Hexamidine diisethionate  
Hexetidine  
Iceland moss (*Cetraria islandica*) extract  
Lactoferrin  
Lauralkonium bromide, L. chloride  
Laurammonium chloride  
Laurylpyridinium chloride  
Mauriella arata extract  
Mushroom (*Cordyceps sabolifera*) extract  
Orange blossom extract  
Orange (*Citrus aurantium dulcis*) peel extract  
PEG-42 Ebinco ceramides extract  
Peppermint (*Mentha piperita*) extract  
Phlodenaron (*Phellodendron amurense*) extract  
Pine (*Pinus sylvestris*) needle extract  
Polymethoxy bicyclic oxazolidine  
Quaternium 73  
Rubus thunbergii extract  
Tea tree (*Melaleuca alternifolia*) oil  
Triclocarban  
Undecylenic acid

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Calcium stearate  
Distarch phosphate  
Hydrated silica



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Polyethylene, micronized  
Silica silylate  
Sodium aluminum silicate  
Zinc stearate

**Anticaries agent**

Cetylamine hydrofluoride  
Olaflur  
Sodium fluoride  
Stearyl trihydroxyethyl propylenediamine dihydrofluoride

**Anticellulite**

Aminopropylamine  
Bladderwrack (*Fucus vesiculosus*) extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Carcinia campegia extract  
Fomes tometanus extract  
Fomistopsis pinicola extract  
Ivy extract  
Mushroom (*Coniopus versicolor*) extract  
TEA-hydroiodide  
Tricholoma matsutake extract

**Antidandruff**

Burdock (*Arctium lappa*) extract  
Chloroxylenol  
Corydalis ambigua extract  
Disodium undecylenamido MEA-sulfosuccinate  
Ginger root extract  
Inga edulis extract  
Mauritiella armata extract  
Myristalkonium saccharinate  
PEG-6 undecylenate  
Piroctone olamine  
Resorcinol  
Rosemary (*Rosmarinus officinalis*) extract  
Sodium shale oil sulfonate  
Stenocalyx micallii extract  
Undecylenamide DEA  
Willow (*Salix alba*) bark extract  
Zinc pythione

**Antifungal**

Black walnut (*Juglans nigra*) extract  
Coniflow<sup>®</sup> (*Echinacea angustifolia*) extract  
Orange blossom extract  
Pfafia paniculata extract

**Anti-inflammatory**

Allantoin polygalacturonic acid  
Bisabolol  
Black poplar (*Populus nigra*) extract  
Brassica rapa-depressa extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Calendula officinalis extract  
Catalpa kaempferia extract  
Celastrus paniculata extract  
Ceramide 33 (liquid soy extract)  
Chaparral (*Larrea mexicana*) extract  
Coneflower (*Echinacea angustifolia*) extract  
Cornflower (*Centaurea cyanus*) extract  
Dipotassium glycyrrhizinate  
Euphoronium fortunei extract  
Euphrasia officinalis extract  
Ficus racemosa extract  
Golden seal (*Hydrastis canadensis*) root extract  
Guaiaculene  
Horse chestnut (*Aesculia hippocastanum*) extract  
Jujube (*Zizyphus jujuba*) extract  
Laminaria japonica extract  
Licorice (*Glycyrrhiza glabra*) extract  
Ligusticum jeholense, L. lucidum extract  
Matricaria (*Chamomilla recutita*) extract  
Melaleuca uncinata extract  
Melia azadirachta extract

Mulberry (*Morus nigra*) extract  
Niacinamide ascorbate  
Orange (*Citrus aurantium dulcis*) peel extract  
Orange blossom extract  
Palmetto extract  
Palmitoyl collagen amino acids  
Passion flower (*Passiflora laurifolia*) fruit extract  
Paulownia imperialis extract  
Salicylic acid  
Shea butter (*Butyrospermum parkii*)  
Sodium carboxymethyl beta-glucan  
Soy (Glycine soja) protein  
Stearyl glycyrrhetinate  
Stenocalyx micallii extract  
Tocopheryl acetate, T. nicotinate  
Trichomonas japonica extract  
Willow (*Salix alba*) extract  
Witch hazel (*Hamamelis virginiana*) extract  
Withania somniferum extract  
Yarrow (*Achillea millefolium*) extract  
Zinc lactate

**Anti-irritant**

Acetyl monoeinanolamine  
Allantoin  
Allantoin acetyl methionine, A. glycyrrhetic acid  
Azelaic acid MEA  
Betaine  
Calendula officinalis extract  
Cocamidopropyl betaine  
Coceth-7 carboxylic acid  
Cornflower (*Centaurea cyanus*) extract  
Diisostearyl dimer dilinoleate  
Dipalmitoyl cysteine  
Green tea extract  
Hydrolyzed sweet almond protein  
Hydroxypropyltrimonium gelatin  
Lauroyl collagen amino acids  
L-Lysine lauroyl methionine  
Mallow extract  
Matricaria (*Chamomilla recutita*) extract  
Palmitoyl hydrolyzed milk protein  
Palmitoyl hydrolyzed wheat protein  
Palmitoyl keratin amino acids  
PEG-12 palm kernel glycerides  
PEG-28 glyceryl tallowate  
PEG-30 glyceryl monococoate  
PEG-60 almond glycerides  
PEG-78 glyceryl cocoate  
PEG-82 glyceryl tallowate  
PEG-200 glyceryl tallowate  
Propionyl collagen amino acids  
PVP  
Saccharomyces lysate extract  
Sodium C12-15 pareth-15 sulfonate  
Sodium lauroamphoacetate  
Soy (Glycine soja) protein  
Undecylenoyl collagen amino acids  
Valerian (*Valeriana officinalis*) extract

**Antimicrobial**

Benzalkonium chloride  
Benzoic acid  
Benzyl alcohol  
Bromochlorophene  
2-Bromo-2-nitropropane-1,3-diol  
Butylparaben  
Capryloyl collagen amino acids  
Capryloyl glycine, C. keratin amino acids  
Captan  
Cetethyldimonium bromide  
Cetyl pyridinium chloride  
Chlorothymol  
Chloroxylenol  
Citron oil  
Copper PCA  
Dichlorobenzyl alcohol  
Dilauryldimonium chloride

Domiphen bromide  
Ethylparaben  
Eucalyptus (*Eucalyptus globulus*) extract  
Fennel (*Foeniculum vulgare*) extract  
Garlic (*Allium sativum*) extract  
Glyceryl caprylate, G. laurate  
Hexamidine diisethionate  
Hinokitiol  
Honeysuckle (*Lonicera caprifolium*) extract  
Lichen (*Usnea barbata*) extract  
Myristalkonium chloride  
Pentylene glycol  
Phenoethyl alcohol  
Phenol  
Phenoxyethanol  
Phenoxyisopropanol  
Phenyl mercuric acetate, P.m. benzoate, P.m. borate  
o-Phenylphenol  
Polymethoxy bicyclic oxazolidine  
Potassium sorbate  
Propylparaben  
Ricinolesamodopropyltrimonium ethosulfate  
Sage (*Salvia officinalis*) extract  
Sodium benzoate, S. pyruithone  
Sodium ricinolesate, S. shale oil sulfonate  
Thimerosal  
Thyme (*Thymus vulgaris*) extract  
Thymol  
Triclocarban  
Triclosan  
Undecylenamidopropyltrimonium methosulfate  
Undecylenic acid  
Zinc oxide, Z. PCA  
Zinc pyruithione, Z. undecylenate

**Antioxidant**

Ascorbic acid  
A. polypeptide  
Ascorbyl oleate, A. palmitate  
Beta-carotene  
BHA  
BHT  
t-Buryl hydroquinone  
Dilauryl thioldipropionate  
Dimyristyl thioldipropionate  
Disodium EDTA  
Distearyl thioldipropionate  
Dodecyl gallate  
EDTA  
Erythorbic acid  
Ferulic acid  
Grape (*Vitis vinifera*) seed extract  
Green tea extract  
HEDTA  
Hydroquinone  
Hydroquinone-beta-D-glucopyranoside  
p-Hydroxyanisole  
Lactoferrin  
Lysine PCA  
Melanin  
Methyl gallate  
Niacinamide ascorbate  
Nordihydroguaiaretic acid  
Oat (*Avena sativa*) extract  
Oryzanol  
Pentasodium pentetate  
Pentetic acid  
Propyl gallate  
Retinyl palmitate polypeptide  
Rosemary (*Rosmarinus officinalis*) extract  
Saccharomyces lysate extract  
Sage (*Salvia officinalis*) extract  
Sodium ascorbate, S. erythorbate  
Sodium metabisulfite  
Sodium sebacate, S. sulfite  
Superoxide dismutase  
Tea (*Camellia sinensis*) extract  
Tetrasodium EDTA  
Tocopherol



## Functions

Tocopheryl acetate, T. linoleate  
Wild marjoram (*Origanum vulgare*) extract  
Yeast (*Saccharomyces cerevisiae*) extract (Faex)

**Antiperspirant**

Allantoin-aluminum chlorhydrate  
Aluminum capryloyl hydrolyzed collagen  
Aluminum chlorohydrate, A. chloride  
Aluminum chlorohydrate, A. chlorohydrate  
Aluminum PCA, A. sesquichlorohydrate  
Aluminum undecylenoyl collagen amino acids  
Aluminum zirconium pentachlorohydrate  
Aluminum zirconium tetrachlorohydrate  
Aluminum zirconium tetrachlorohydrate GLY  
Aluminum zirconium trichlorohydrate  
Aluminum-zirconium-glycine powder  
Sage (*Salvia officinalis*) extract  
Tomentil (*Potentilla erecta*) extract  
Zirconium chlorohydrate

**Antiseptic**

Aluminum PCA  
Azadirachta indica extract  
2-Bromo-2-nitropropane-1,3-diol  
Calendula amurensis extract  
p-Chloro-m-cresol  
Clove (*Eugenia caryophyllus*) oil  
Crataegus cuneata extract  
Dichlorobenzyl alcohol  
Eniada phaseoloides extract  
Eucalyptus (*Eucalyptus globulus*) extract  
Golden seal (*Hydrastis canadensis*) root extract  
Hexachlorophene  
Melia australasica, M. azadirachta extract  
Methyl salicylate  
Orange (*Citrus aurantium dulcis*) peel extract  
Oxyquinoline sulfate  
Pfaffia paniculata extract  
Potassium abietoyl hydrolyzed collagen  
PVP-iodine  
Silver nitrate  
Sodium salicylate  
Sterculia plataniifolia extract  
Tea tree (*Melaleuca alternifolia*) oil  
Tomentil (*Potentilla erecta*) extract  
Xanthoxylum bungeanum extract

**Antistat**

Acetamide MEA  
Acetamidopropyl trimonium chloride  
6-(N-Acetylamino)-4-oxyhexyltrimonium chloride  
Alkyl dimethyl betaine  
Babassuamidopropylalkonium chloride  
Behenamidopropyl ethyldimonium ethosulfate  
Behenamidopropyl hydroxyethyl dimonium chloride  
Carboxymethyl chitin  
Cetearyl morpholinium ethosulfate  
Cetrimonium chloride  
Chitin  
Chitosan  
Cocamidopropyl ethyldimonium ethosulfate  
Cocodimonium hydroxypropyl hydrolyzed rice protein  
Cocodimonium hydroxypropyl hydrolyzed soy protein  
Dimethicone hydroxypropyl trimonium chloride  
Dimethyl behenamine, D. cocamine  
Dimethyl palmitamine, D. soyamine  
Dimethyl tallowamine  
Dioleylethylamidoethyl hydroxyethylmonium methosulfate  
Dipalmitoylethyl hydroxyethylmonium methosulfate  
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
Erucamidopropyl hydroxysultaine  
Glycerol monopyrogallate  
Hydrogenated tallowamine oxide  
Isostearamidopropyl dimethylamine

Lactamidopropyl trimonium chloride  
Lauryldimonium hydroxypropyl hydrolyzed collagen  
Linoleamidopropyl dimethylamine dimer dilinoleate  
Cisalkonium chloride  
PEG-2 cocamine  
PEG-2 cocomonium chloride  
PEG-2 oleammonium chloride  
PEG-8 caprylic/capric glycerides  
PEG-10 cocamine  
PEG-15 soyamine  
PPG-9 diethylmonium chloride  
PPG-25 diethylmonium chloride  
PPG-40 diethylmonium chloride  
Propylene glycol stearate  
Quaternum-26, -27, -53, -62, -72  
Rapeseedamidopropyl benzyldimonium chloride  
Rapeseedamidopropyl epoxypropyl dimonium chloride  
Silica, colloidal  
Sorbital caprylate  
N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Soyethyl morpholinium ethosulfate  
Soyethylidimonium ethosulfate  
Stearylalkonium chloride  
Stearamidopropyl benzyl dimonium chloride  
Stearamidopropyl ethyldimonium ethosulfate  
Stearylmonium chloride  
N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Wheat germamidopropyl ethyldimonium ethosulfate

**Astringent**

Aluminum citrate, A. lactate  
Asaragius sinicus extract  
Astrocaryum murumuru, A. nucuma extract  
Azadirachta indica extract  
Azelamide MEA  
Bearberry (*Arctostaphylos uva-ursi*) extract  
Birch (*Betula alba*) leaf extract  
Catalpa kaempferia extract  
Celastus paniculata extract  
Coccinea indica extract  
Coffee (*Coffea arabica*) bean extract  
Euphrasia officinalis extract  
Euterpe precatoria extract  
Evening primrose (*Oenothera biennis*) extract  
Gentian (*Gentiana lutea*) extract  
Geranium maculatum extract  
Grape (*Vitis vinifera*) leaf extract  
Henna (*Lawsonia inermis*) extract  
Hierochloa odorata extract  
Honeysuckle (*Lonicera caprifolium*) extract  
Hops (*Humulus lupulus*) extract  
Horsetail extract  
Hypericum perforatum extract  
Ivy extract  
Juniperus communis extract  
Kadsura heteriloca extract  
Kola (*Cola acuminata*) extract  
Lady's mantle (*Alchemilla vulgaris*) extract  
Lemon (*Citrus medica limonum*) extract, peel extract  
Lemon bioflavonoids extract  
Lysimachia foenum-graecum extract  
Magnolia spp. extract  
Mauritia flexosa extract  
Maximilliana regia extract  
Melaleuca uncinata, M. wilsonii extract  
Melia australasica extract  
Nettle (*Urtica dioica*) extract  
Oak (*Quercus*) bark extract  
Ocimum basilicum, O. sanctum extract  
Palmetto extract  
Passion flower (*Passiflora laurifolia*) fruit extract  
Plantain (*Plantago major*) extract  
Polygonum multiflorum extract  
Pterocarpus marsipianus extract  
Raspberry (*Rubus*) extract

Sambucus nigra oil  
Sanguisorba root extract  
Selinum sop. extract  
Sborea robusola extract  
Tannic acid  
Walnut (*Juglans regia*) leaf extract, oil  
Wheat (*Triticum vulgare*) protein  
White nettle (*Lamium album*) extract  
Witch hazel (*Hamamelis virginiana*) extract  
Xanthoxylum bungeanum extract  
Zinc lactate  
Ziziphus jujuba extract

**Binder**

Aluminum starch octenylsuccinate  
Boron nitride  
C20-40, C30-50, C40-60 alcohols  
Calcium stearate  
Cellulose gum  
Dihydroabieryl behenate  
Diisostearyl malate  
Diocetyl sebacate  
Distarch phosphate  
Ethylcellulose  
Gellan gum  
Hydrogenated jojoba oil  
Isocetyl alcohol, I. palmitate  
Isopropyl isostearate  
Isostearyl erucate, I. isostearyl  
Isostearyl neopentanoate  
Maltodextrin  
Methylcellulose  
Microcrystalline cellulose  
Oeryl palmitate  
Oxydodecyl myristate  
bis-Oxydodecyl stearoyl dimer dilinoleate  
Oxydodecyl stearoyl stearate  
Oleyl oleate  
PEG-20, -75, -150, -240, -350  
Polydipentene  
Polyethylene, P. micronized  
PTFE  
PVP  
Sorbitol  
Synthetic wax  
Tapioca dextrin  
Tridecyl behenate, T. neopentanoate  
Tridecyl stearoyl stearate  
Trisodium HEDTA

**Biol. polymer**

Distarch phosphate  
Dog rose (*Rosa canina*) seed extract  
Hydrogen peroxide  
Kojic acid  
Mulberry (*Morus nigra*) extract  
Sanguisorba root extract

**Botanical**

Acacia  
Acacia farnesiana extract  
Agrimonia (*Agrimonia eupatoria*) extract  
Alder (*Alnus firma*) extract  
Alfalfa (*Medicago sativa*) extract  
Algae (*Ascophyllum nodosum*) extract  
Algae (*Libotamnium calcarum*) extract  
Aloe barbadensis, A.b. extract  
Aloe capensis extract  
Alpine Veronica extract  
Althea officinalis extract  
Angelica archangelica extract  
Anise (*Pimpinella anisum*) extract  
Apple (*Pyrus malus*) extract  
Apricot (*Prunus ameniaca*) extract  
Arnica montana extract  
Artemisia capillaris extract  
Artichoke (*Cynara scolymus*) extract  
Asafetida (*Ferula assa foetida*) extract  
Asiaticum sieboldi extract

## Functions

Asparagus officinalis extract	Cucumber (Cucumis sativus) extract	Jasmine (Jasminum officinale) extract
Astragalus sinicus extract	Cypress (Cupressus sempervirens) extract	Job's tears (Coix lacryma-jobi) extract
Avens (Geum rivale) extract	Dandelion (Taraxacum officinale) extract	Joyoba (Buxus chinensis) seed powder
Avocado (Persea gratissima) extract	Date (Phoenix dactylifera) extract	Juniperus communis extract
Balm mint (Melissa officinalis) extract, oil extract	Dead Sea Mud, Salts	Kelp (Macrocystis pyrifera) extract
Banana (Musa sapientum) extract	Dog rose (Rosa canina) hips extract	Kiwi (Acumia chinensis) fruit extract, seed oil
Barley (Hordeum vulgare) extract	Dyer's broom extract	Kola (Cola acuminata) extract
Basil (Ocimum basilicum) extract	Eleuthero ginseng (Acanthopanax senticosus) extract	Kramena mandra extract
Bearberry (Arctostaphylos uva-ursi) extract	Elm (Ulmus campestris) extract	Lady's mantle (Alchemilla vulgaris) extract
Bee pollen extract	Eucalyptus (Eucalyptus globulus) extract	Lady's Thistle (Silybum marianum) extract
Beer (Beta vulgaris) extract	Eucalyptus globulus oil	Laurel (Laurus nobilis) extract
Betagiucan	Eucommia ulmoides extract	Lavender (Lavandula angustifolia) extract, water
Bilberry (Vaccinium myrtillus) extract	Euphrasia officinalis extract	Lemon (Citrus medica limonum) extract, juice
Bioflavonoids	Evening primrose (Oenothera biennis) extract, oil	extract, peel extract
Birch (Betula alba) bark extract, leaf extract	Everlasting (Helichrysum arenarium) extract	Lemon bioflavonoids extract
Birch (Betula platyphylla japonica) extract	Fennel (Foeniculum vulgare) extract	Lemongrass (Cymbopogon schoenanthus) extract
Bitter orange (Citrus aurantium amara) extract, flower extract, peel extract	Fenugreek extract	Leopard flower (Belamcanda chinensis) root extract
Black cohosh (Cimicifuga racemosa) extract	Fermented rice (Oryza sativa) extract	Lettuce (Lactuca scariola sativa) extract
Black currant (Ribes nigrum) extract	Fern (Dryopteris filix-Mas) extract	Licorice (Glycyrrhiza glabra) extract
Black henna extract	Fig (Ficus carica) extract	Lilac (Syringa vulgaris) extract
Black poplar (Populus nigra) extract	Fir needle extract	Linden (Tilia argentea) extract
Black walnut (Juglans nigra) extract	Fumitory (Fumaria officinalis) extract	Linden (Tilia cordata) extract, water
Bladderwrack (Fucus vesiculosus) extract	Gardenia florida extract	Loquat (Eriobotrya japonica) leaf extract
Borage (Borago officinalis) extract	Garlic (Allium sativum) extract	Maidenhair fern extract
Buckhorn (Frangula alnus) extract	Gelidium cartilagineum	Magnolia kobus extract
Burdock (Arctium lappa) extract	Gentian (Gentiana lutea) extract	Mallow extract
Burdock (Arctium minus) root extract	Geranium maculatum extract	Mandragora officinarum extract
Burnet extract	Ginger root extract	Mannan
Butcherbroom (Ruscus aculeatus) extract	Ginkgo biloba extract	Marigold
Cabbage rose (Rosa centifolia) extract	Ginseng (Panax ginseng) extract	Marine silts
Calamus (Acorus calamus) extract	Glycymethic acid	Masticana (Chamomilla recutita) extract
Calendula officinalis extract	Glycymethic acid	Meadowsweet (Spiraea ulmaria) extract
Caper (Capparis spinosa) extract	Glycymethic acid, ammoniated	Melon (Cucumis melo) extract
Capsicum frutescens extract, C.f. oleoresin	Golden seal (Hydrastis canadensis) root extract	MEA iodine
Caraway (Carum carvi) extract	Goldthread (Coptis japonica) extract	Mistletoe (Viscum album) extract
Carageenan (Chondrus crispus)	Gutu kola extract	Mugwort (Artemisia princeps) extract, water
Carrot (Daucus carota) extract	Grape (Vitis vinifera) distillate, extract	Mulberry (Morus alba) root extract
Carrot (Daucus carota sativa) oil	Grape (Vitis vinifera) leaf, seed extract	Mulberry (Morus bombycis) root extract
Cassia auncularia extract	Grape skin extract	Mushroom extract
Celandine (Chelidonium majus) extract	Grapefruit (Citrus grandis) peel extract	Myrrh (Commiphora myrrha) extract
Chamomile (Anthemis nobilis) extract, oil	Green bean (Phaseolus lunatus) extract	Nasturtium extract
Chaparral (Larrea mexicana) extract	Ground Ivy (Glechoma hederacea) extract	Neroli extract
Cherry (Prunus speciosa) leaf extract	Guarana (Paullinia cupana) extract	Nettle (Urtica dioica) extract
Cherry bark, C.b. extract	Harpagophytum procumbens extract	Oak (Quercus) bark extract
Chestnut (Castanea sativa) extract	Hayflower extract	Oak root extract
Chinese nioiscus (Hibiscus rosa-sinensis) extract	Hazel (Corylus avellana) nut extract	Oat (Avena sativa) bran, bran extract, flour, protein
Chlorella vulgaris extract	Henna (Lawsonia inermis) extract	Oat flower
Cimicifuga racemosa rhizome extract	Hesperidin, H. methyl chalcone	Olive (Olea europaea) extract, leaf extract
Cinchona succirubra extract	Hibiscus scardifolia extract	Onion (Allium cepa) extract
Citroflavonoid, water soluble	Hibiscus synacus extract	Orange blossom extract
Citrus bioflavonoid complex	High beta-glucan barley flour	Orange (Citrus aurantium dulcis) flower extract, peel extract
Clary extract	Honeysuckle (Lonicera caprifolium) extract	Pansy (Viola tricolor) extract
Clove (Eugenia carvophyllus) extract	Honeysuckle (Lonicera japonica) leaf extract	Papaya (Carica papaya) extract
Clover (Trifolium pratense) extract	Hops (Humulus lupulus) extract	Parsley (Carum petroselinum) extract
Cnidium officinale rhizome extract, C.o. water	Horse chestnut (Aesculia hippocastanum) extract	Passion flower (Passiflora laurifolia) fruit extract
Coffee (Coffea arabica) bean extract	Horseradish (Cochlearia armoracia) extract	Passionflower (Passiflora incarnata) extract
Colloidal oatmeal	Horsetail extract	Pea (Pisum sativum) extract
Coltsfoot (Tussilago farfara) leaf extract	Houttuynia cordata extract	Peach (Prunus persica) extract, leaf extract
Comfrey (Symphytum officinale) leaf extract	Hyacinth (Hyacinthus orientalis) extract	Pelargonium capitatum extract
Condurango extract	Hydrocotyl (Centeila asiatica) extract	Pellitory (Panetana officinalis) extract
Conerlower (Echinacea angustifolia) extract	Hydrolyzed oat protein, soy flour	Pennyroyal (Mentha pulegium) extract
Corallina officinalis	Hypericum perloratum extract	Peony (Paeonia alba) extract
Corchorus olitorius extract	Hyssop (Hyssopus officinalis) extract	Peony (Paeonia obovata) root extract
Conander (Conandrum sativum) extract	Indian cress (Tropaeolum majus) extract	Peppermint (Mentha pipenta) extract, oil
Com (Zea mays) cob powder, silk extract	Isodonis Japonicus extract	Penilla ocyroides extract
Com poppy (Papaver rhoeas) extract	Ivy extract	Periwinkle (Viola minor) extract
Comflower (Centaurea cyanus) extract	Japanese angelica (Angelica acutiloba) extract, water	PEG-80 jojoba acid/alcohol
Couch (Agropyron repens) grass	Japanese hawthorn (Crataegus cuneata) extract	PEG-120 jojoba acid/alcohol
Crataegus monogyna extract		
Crinthum mautium extract		

## CAMPO Siddha Herbs Extracts

Jothi-Pul (Glow-grass) Siddha Extract for High content bio-available  
 Natural Radium for anti Kaposi Sarcoma Skin Treatment.  
 Roma-Maram (Hairy Tree) Siddha Extract for ANTI-SENSE DNA  
 Topical applications for HIV+ Lymph-nodes  
 Siddha Extracts for post-Chemotherapy Skin-Damage Treatment



CAMPO RESEARCH



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## Functions

Pfaffia paniculata extract  
 Phellodendron amurense extract  
 Phospholipids  
 Pimento (Pimenta officinalis) extract  
 Pine (Pinus sylvestris) cone, needle extract  
 Pineapple (Ananas sativus) extract  
 Plantain (Plantago major) extract  
 Pollen extract  
 Pongamol  
 Pona Cocos extract  
 Pueraria lobata extract  
 Queen of the meadow extract  
 Quillaja saponaria extract  
 Quince (Pyrus cydonia) seed extract  
 Quinoa (Chenopodium quinoa) extract  
 Raspberry (Rubus) extract  
 Rauwolfia (Serpenuna) extract  
 Red clover  
 Rehmannia chinensis extract  
 Restharrow (Ononis spinosa) extract  
 Rhododendron chrysanthum extract  
 Rhodophyceae extract  
 Rhubarb (Rheum palmatum) extract  
 Rice (Oryza sativa) bran extract  
 Rice fatty acid  
 Rose (Rosa multiflora) extract  
 Rosemary (Rosmarinus officinalis) extract  
 Rubia unctorum extract  
 Safflower (Carthamus tinctorius) extract  
 Sage (Salvia officinalis) extract, water  
 Sambucus nigra berry extract, extract  
 Sandalwood (Santalum album) extract  
 Sanguinaria canadensis extract  
 Saponaria officinalis extract  
 Sasa veitchii extract  
 Saxifraga sarmentosa extract  
 Scabiosa arvensis extract  
 Scutellaria baicalensis root extract  
 Silk extract  
 Silver fir (Abies pectinata) extract  
 Sisal (Agave rigida) extract  
 Slippery elm extract  
 Soapberry (Sapindus mukurossi) extract  
 Sophora angustifolia extract  
 Sophora flavescens root extract  
 Sophora japonica extract  
 Soybean (Glycine soja) extract  
 Soy (Glycine soja) germ extract, protein, sterol  
 Spearmint (Mentha viridis) extract, oil  
 Spinach (Spinacia oleracea) extract  
 Spiraea ulmaria extract  
 Sunflower (Helianthus annuus) seed extract  
 Sweet almond (Prunus amygdalus dulcis) extract  
 Sweet cherry (Prunus avium) extract  
 Sweet cicely (Anthriscus cerefolium) extract  
 Sweet clover (Melilotus officinalis) extract  
 Sweet violet (Viola odorata) extract  
 Swertia chirata extract  
 Tea (Camellia sinensis) extract  
 Thistle (Chicus benedictus) extract  
 Thyme (Thymus vulgaris) extract  
 Tomato (Solanum lycopersicum) extract  
 Tormentil (Potentilla erecta) extract  
 Tuberosa (Polianthes tuberosa) extract  
 Turmeric (Curcuma longa) extract  
 Valerian (Valeriana officinalis) extract  
 Walnut (Juglans regia) extract, leaf extract  
 Water Lily (Nymphaea alba) root extract  
 Watercress (Nasturtium officinale) extract

Wheat (Triticum vulgare) extract, protein  
 Wheat (Triticum vulgare) germ extract  
 Wheat bran lipids  
 White ginger (Hedychium coronarium) extract  
 White nettle (Lamium album) extract  
 Wild agrimony (Potentilla anserina) extract  
 Wild cherry (Prunus serotina) bark extract  
 Wild indigo (Baptista tinctoria)  
 Wild marjoram (Origanum vulgare) extract  
 Willow (Salix alba) bark extract, extract  
 Willow (Salix alba) leaf extract  
 Witch hazel (Hamamelis virginiana) extract  
 Yarrow (Achillea millefolium) extract  
 Yeast (Saccharomyces cerevisiae) extract (Faex)  
 Yucca vera extract  
 Zanthoxylum piperitum extract  
 Zedoary (Curcuma zedoaria) oil

**Buffer**

Ammonium carbonate, A. phosphate  
 Calcium hydroxide, C. phosphate  
 Citric acid  
 Ethanolamine HCl  
 Glycine  
 Phosphoric acid  
 Potassium phosphate  
 Potassium sodium tartrate  
 Sodium acetate, S. citrate  
 Sodium lactate, S. phosphate  
 Succinic acid  
 Tromethamine

**Carrier**

Acrylates copolymer, spherical powder  
 Arginine  
 Caprylic/capric triglyceride  
 Caprylic/capric/lauric triglyceride  
 Caprylic/capric/linoleic triglyceride  
 Caprylic/capric/oleic triglycerides  
 Ceteareth-20  
 Coconut (Cocos nucifera) oil  
 Cyclodextrin  
 Dipropylene glycol  
 Glyceryl caprylate, G. caprylate/caprate  
 Hydrated silica  
 Liposomes  
 Magnesium silicate  
 Methyl propanediol  
 PEG-8/SMDI copolymer  
 Potassium chloride  
 PPG-12/SMDI Copolymer  
 PPG-5/SMDI Copolymer  
 Propylene carbonate, P. glycol  
 Serum albumin  
 Sodium carboxymethyl beta-glucan  
 Sodium chloride  
 Sodium magnesium silicate  
 Tapioca dextrin

**Chelators**

beta-Alanine diacetic acid  
 Calcium disodium EDTA  
 Disodium EDTA, -copper  
 EDTA  
 HEDTA  
 Malic acid  
 Monostearyl citrate  
 Pentasodium pentetate  
 Penitetic acid

Phytic acid  
 Potassium aspartate  
 Sodium aspartate  
 Sodium dihydroxyethylglycinate  
 Sodium hexametaphosphate  
 Tetrahydroxypropyl ethylenediamine  
 Tetrasodium EDTA  
 Tripotassium EDTA  
 Trisodium EDTA, HEDTA

**Cell stimulant**

Aesculus chinensis extract  
 Artemisia apiacea extract  
 Astrocaryum muru. A. nucuma extract  
 Baccharis gaspares extract  
 Borojoa sorbilis extract  
 Calendula amurensis extract  
 Chrysanthemum morifolium extract  
 Coccinea indica extract  
 Comfrey (Symphytum officinale) leaf extract  
 Condurango extract  
 Dandelion (Taraxacum officinale) extract  
 Echitea glauca extract  
 Equisetum arvense extract  
 Eucalyptus (Eucalyptus globulus) extract  
 Euphoronium fortunei extract  
 Euterpe precatoria extract  
 Ficus racemosa extract  
 Glycoproteins  
 Hierochloa odorata extract  
 Horse chestnut (Aesculus hippocastanum) extract  
 Inga edulis extract  
 Kadsura hettilloca extract  
 Ligustrum lucidum extract  
 Lysimachia toenum-graecum extract  
 Mauritia flexosa extract  
 Maximilliana regia extract  
 Metaleuca bracteata, M. symphyocarp extract  
 Neumbium speciosum extract  
 Ocimum basilicum extract, O. santum extract  
 Paulownia imperialis extract  
 Pfaffia spp. extract  
 Pterocarpus marsupianus extract  
 Rubus thunbergii extract  
 Selinum spp. extract  
 Shorea robusta extract  
 Xanthoxylum bungeanum extract

**Cleansing**

Birch (Betula alba) leaf extract  
 Lemongrass (Cymbopogon schoenanthus) extract  
 Oat (Avena sativa) bran extract  
 Passion flower (Passiflora laurifolia) fruit extract  
 Witch hazel (Hamamelis virginiana) extract  
 Yarrow (Achillea millefolium) extract

**Conditioner**

Acetamide MEA  
 6-(N-Acetylamino)-L-oxyhexyltrimonium chloride  
 Acrylamidopropyltrimonium chloride/acrylamide copolymer  
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer  
 AMP-isostearyl hydrolyzed wheat protein  
 Apricot (Prunus armeniaca) kernel oil  
 Behenalkonium chloride  
 Behenamidopropyl dihydroxypropyl dimonium chloride  
 Behenamidopropyl ethyldimonium ethosulfate  
 Behenamidopropyl PG-dimonium chloride

**CAMPO Siddha Herb Extracts**  
**CAMPO Rainforest Herb Extracts & Oils**  
**CAMPO Australasian Herbs & Tea Tree Extracts**  
**CAMPO Chinese & Japanese Herb Extracts**



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## Functions

Behenamidopropyl dimethylamine behenate	Hydrolyzed sweet almond protein	Polymethacrylamidopropyltrimonium chloride
Behenamine oxide	Hydrolyzed wheat protein/PVP copolymer	Polyoxyethylene dihydroxypropyl linoleaminium chloride
Behenyl PG-trimonium chloride	Hydrolyzed wheat protein polysiloxane polymer	Polyquaternium-2, -5, -6, -11, -16
Behenyl betaine	Hydroxycetyl hydroxyethyl dimonium chloride	Polyquaternium-17, -18, -24, -29, -44
Benzyltrimonium hydrolyzed collagen	Hydroxyproline	Potassium dimethicone copolyol panthenyl phosphate
Canolamidopropyl betaine	Hydroxypropyl chitosan	Potassium lauroyl collagen amino acids
Capramide DEA	Hydroxypropyl guar hydroxypropyltrimonium chloride	Potassium lauroyl hydrolyzed soy protein
Caprylic/capric/lauric triglyceride	Hydroxypropyl-bis-isostearyamidopropylidimonium chloride	Potassium lauroyl wheat amino acids
Caprylyl pyrrolidone	Hydroxypropyl bis-stearyldimonium chloride	Potassium stearoyl hydrolyzed collagen
Cassia aunculata extract	Hydroxypropyltrimonium gelatin	PPG-5 lanolin alcohol ether
Cetamine oxide	Hydroxypropyltrimonium hydrolyzed keratin	PPG-9 diethyltrimonium chloride
Cetearalkonium chloride	H.h. silk	PPG-20 lanolin alcohol ether
Chitosan PCA	Hydroxypropyltrimonium hydrolyzed wheat protein	Proline
Citric acid	Isopropyl hydroxybutylamide dimethicone copolyol	Propylene glycol stearate
Cocamidopropyl dimethylamine, C.d. lactate, C.d. propionate	Isopropyl lanolate	PVP/dimethiconylacrylate/polycarbonyl/polyglycol ester
Cocamidopropyl dimethylammoniohydroxypropyl hydrolyzed collagen	Isostearamidopropyl betaine, I. dimethylamine	PVP/dimethylammonioethylmethacrylate copolymer
Cocamidopropylidimonium	Isostearamidopropyl dimethylamine gluconate	PVP/dimethylammonioethylmethacrylate/polycarbonyl/polyglycol ester
hydroxypropylhydrolyzed collagen	Isostearamidopropyl dimethylamine glycolate	PVP/hydrolyzed wheat protein copolymer
Cocamidopropyl ethyldimonium ethosulfate	Isostearamidopropyl dimethylamine lactate	Quaternium-22, -26, -33, -61, -62, -70, -80
Cocamidopropyl PG-dimonium chloride, C.P.c. phosphate	Isostearamidopropyl ethyldimonium ethosulfate	Quaternium-76 hydrolyzed collagen
Coco-morpholine oxide	Isostearamidopropyl laurylacetamidonium chloride	Rapeseedamidopropyl benzylidimonium chloride
Coco/oleamidopropyl betaine	Isostearamidopropyl morpholine, I.m. lactate	Rapeseedamidopropyl epoxypropyl dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed hair keratin	Isostearamidopropyl morpholine oxide	Rapeseedamidopropyl ethyldimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed rice protein	Isostearamidopropyl PG-dimonium chloride	Rice peptide
Cocodimonium hydroxypropyl hydrolyzed silk	Isostearaminopropylidimonium chloride	Ricinoleamidopropyl-dimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed soy protein	Isostearyl hydrolyzed animal protein	Ricinoleamidopropyl betaine
Coconut alcohol	Isostearylamidopropyl dihydroxypropyl dimonium chloride	Ricinoleamidopropyl dimethylamine lactate
N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate	Lactoglobulin	Ricinoleamidopropyl ethyldimonium ethosulfate
Collagen phtalate	Lauramidopropyl dimethylamine	Ricinoleamidopropyltrimonium chloride
Dibehenyl/diarachidyl dimonium chloride	Lauramidopropyl PG-dimonium chloride, I.P.c. phosphate	Ricinoleamidopropyltrimonium ethosulfate
Dibehenylidimonium chloride	Lauramine oxide	Silicone quaternium-3, -4
Dicetyldimonium chloride	Laurampho PG-glycinate phosphate	Silk amino acids
Didecylidimonium chloride	Lauroyl hydrolyzed collagen, L.h. elastin	Sodium/TEA-lauroyl collagen amino acids
Dihydroxyethyl cocamine oxide	Lauroyl silk amino acids	Sodium/TEA-lauroyl keratin amino acids
Dihydroxyethyl dihydroxypropyl stearamonium chloride	Lauryl methyl gluceth-10 hydroxypropyl-dimonium chloride	Sodium citrate
Dihydroxyethyl tallow glycinate	Lauryl phosphate, L. pyrrolidone	Sodium cocoyl hydrolyzed soy protein
Dihydroxyethyl tallowamine oxide	Laurylidimonium hydroxypropyl hydrolyzed collagen, keratin, soy protein	Sodium hydrogenated tallow dimethyl glycinate
Dilauryl acetyl dimonium chloride	Linoleamidopropyl dimethylamine	Sodium lauroyl collagen, keratin amino acids
Dilinoamidopropyl dimethylamine	Milk amino acids	Sodium lauroyl wheat amino acids
Dimethyl hydrogenated tallowamine	Milk protein (Lactis proteinum)	Sodium stearoamphoacetate
Dimethyl lauramine, D.I. isostearate	Myrstakonium chloride	Soluble keratin, wheat protein
Dimethyl myristamine, soyamine, stearamine	Myristamidopropyl betaine, M. dimethylamine	Soyamide DEA
Dimethylamidopropylamine dimerate	Myristonium bromide	Soyamidopropyl benzylidimonium chloride
Disodium hydrogenated cottonseed glyceride sulfosuccinate	Oat (Avena sativa) protein	Soyamidopropyl betaine, S. dimethylamine
Disodium laureth sulfosuccinate	Oleamide	Soyamidopropyl ethyldimonium ethosulfate
Disodium lauroamphodiacetate	Oleamidopropyl betaine, O. dimethylamine	Soyethyl morpholinium ethosulfate
Distearylidimonium chloride	Oleamidopropyl dimethylamine hydrolyzed collagen	Soyethyldimonium ethosulfate
Ethyl ester of hydrolyzed keratin	Oleamidopropylamine oxide	Stearamide MEA
N-Ethylether-bis-1,4-(N-isostearylamidopropyl)-N,N-dimethyl ammonium chlo	Oleamine	Stearamidoethyl diethylamine, ethanolamine
Glutamic acid	Oleamine oxide	Stearamidopropyl benzyl dimonium chloride
Glyceryl collagenate	Oleoyl sarcosine	Stearamidopropyl cetaryl dimonium tosylate
Glycine	Oleyl betaine	Stearamidopropyl dimethylamine stearate
Guar hydroxypropyltrimonium chloride	Oleyl dimethylamidopropyl ethonium ethosulfate	Stearamidopropyl ethyldimonium ethosulfate
Henna (Lawsonia inermis) extract	Palmitamidopropyl betaine	Stearamidopropyl morpholine lactate
Hydrogenated tallowamine oxide	Palmitamidopropyl dimethylamine	Stearamidopropyl PG-dimonium chloride
Hydrogenated tallowtrimonium chloride	Palmitamine, P. oxide	phosphate
Hydrolyzed conchiorin protein	Panthenyl hydroxypropyl steardimonium chloride	Stearamine oxide
Hydrolyzed egg protein	PEG-2 milk solids	Steardimonium hydroxypropyl hydrolyzed collagen, keratin
Hydrolyzed extensin	PEG-2 oleammonium chloride	Steardimonium panthenol
Hydrolyzed fibronectin	PEG-3 lauramine oxide	Stearoyl amidoethyl diethylamine
Hydrolyzed fibronecin	PEG-5 stearyl ammonium lactate	Steartimonium bromide
Hydrolyzed fish protein	PEG-15 cocomonium chloride	Stearyl dimethicone
Hydrolyzed keratin	PEG-15 cocopolyamine	Tallowamidopropyl dimethylamine
Hydrolyzed lactalbumin	PEG-15 tallowmonium chloride	Tetramethyl trihydroxy hexadecane
Hydrolyzed milk protein	PEG-15 tallowmonium chloride	TEA-cocoyl hydrolyzed collagen
Hydrolyzed oats	PEG-27	Trachea hydrolysate
Hydrolyzed reticulin	PEG-40	Tricetylmonium chloride
Hydrolyzed soy protein	PEG-35 lanolin	Tridecyl salicylate
	PEG-7000	Triethonium hydrolyzed collagen ethosulfate
	Polydimethicone copolyol	Wheat germamidopropylidimonium chloride
		Wheat germamidopropyl dimethylamine lactate

## Functions

Wheat germamidopropyl ethyldimonium  
ethosulfate  
Wheat peptide  
Yeast powder, deproteinated

**Coupling agent**

Aceryl monoethanolamine  
Buryloctanediol  
Myreth-3  
Oleyl alcohol  
PPG-10 butanediol  
PPG-10 cetyl ether  
PPG-10 oleyl ether  
PPG-15 stearyl ether  
PPG-22 butyl ether  
PPG-23 oleyl ether  
PPG-50 oleyl ether  
Trideceth-7 carboxylic acid

**Denaturant**

Brucine sulfate  
Denatonium benzoate, saccharide  
Nicotine sulfate  
Sucrose octaacetate  
Thymol

**Dental powder**

Dicalcium phosphate  
Silica  
Sodium monofluorophosphate  
Stannous fluoride

**Deodorant**

Abietic acid  
Azadirachta indica extract  
Chlorophyllin-copper complex  
Eugenia jambolana extract  
Farnesol  
Fermented vegetable  
Mauritia flexosa extract  
Salvia multiorrhiza extract  
Sodium aluminum chlorohydroxy lactate  
Spondias amara extract  
Triethyl citrate  
Zinc phenol sulfonate, Z. ricinoleate

**Depilatory**

Barium sulfide  
Beeswax, oxidized  
Calcium thioglycolate  
L-cysteine HCL  
Potassium thioglycolate  
Sodium thioglycolate  
Thioglycerin

**Detergent**

Ammonium laureth sulfate  
Ammonium lauryl sulfate  
Capramide DEA  
Cocamidopropyl dimethylamine lactate  
Decyl glucoside  
Decyltetradeceth-25  
DEA lauryl sulfate  
Diamyl sodium sulfosuccinate  
Dicyclohexyl sodium sulfosuccinate  
Diisobutyl sodium sulfosuccinate  
Disodium caproamphodipropionate  
Disodium caproamphodipropionate  
Disodium capryloamphodiacetate  
Disodium capryloamphodipropionate  
Disodium cetearyl sulfosuccinate  
Disodium cocamido MEA-sulfosuccinate  
Disodium cocamido MIPA-sulfosuccinate  
Disodium cocoamphodipropionate  
Disodium deceth-6 sulfosuccinate  
Disodium isodecyl sulfosuccinate  
Disodium lauramido MEA-sulfosuccinate  
Disodium lauramido PEG-2 sulfosuccinate  
Disodium laureth sulfosuccinate

Disodium lauroamphodiacetate  
Disodium lauroamphodipropionate  
Disodium lauryl sulfosuccinate  
Disodium myristamido MEA-sulfosuccinate  
Disodium nonoxynol-10 sulfosuccinate  
Disodium oleamido PEG-2 sulfosuccinate  
Disodium PEG-4 cocoamido MIPA-sulfosuccinate  
Disodium ricinoleamido MEA-sulfosuccinate  
Disodium tallowiminodipropionate  
Dodecylbenzene sulfonic acid  
Dodoxynol-6, -9  
Isopropylamine dodecylbenzenesulfonate  
Isostearamidopropyl betaine  
Isostearth-6 carboxylic acid  
Isostearamphopropionate  
Isostearyl hydroxyethyl imidazoline  
Lauramidopropylamine oxide  
Laureth-11  
Lauroampho PG-glycinate phosphate  
Lauryl glucoside, L. phosphate  
Magnesium laureth sulfate, M. lauryl sulfate  
Magnesium PEG-3 cocamide sulfate  
MEA-dodecylbenzenesulfonate  
MEA-laureth sulfate  
MEA-lauryl sulfate  
MIPA-lauryl sulfate  
Myristamine oxide  
Myristic acid  
Nonoxynol-10  
Oleoamphohydroxypropylsulfonate  
Oleth-12, -15  
Oleyl betaine  
Palmitamidopropyl betaine  
PEG-10 glyceryl stearate  
PEG-15 glyceryl stearate  
PEG-25 glyceryl isostearate  
Potassium cocoyl hydrolyzed collagen  
Sodium caproamphoacetate  
Sodium cocoamphoacetate  
Sodium cocoamphopropionate  
Sodium cocomonoglyceride sulfate  
Sodium cocoyl hydrolyzed soy protein  
Sodium cocoyl isethionate  
Sodium C12-15 pareth-25 sulfate  
Sodium C14-16 olefin sulfonate  
Sodium C14-17 alkyl sec sulfonate  
Sodium deceth sulfate  
Sodium decyl diphenyl ether sulfonate  
Sodium dodecylbenzenesulfonate  
Sodium dodecyl diphenyl ether sulfonate  
Sodium iodate  
Sodium laureth-2 sulfate  
Sodium laureth-3 sulfate  
Sodium laureth-7 sulfate  
Sodium laureth-12 sulfate  
Sodium laureth-13-carboxylate  
Sodium laureth sulfate  
Sodium lauriminodipropionate  
Sodium lauroamphopropionate  
Sodium lauroyl methyl alaninate  
Sodium lauryl phosphate, S.I. sulfate  
Sodium lauryl sulfacetate  
Sodium methyl oleoyl laurate  
Sodium methyl cocoyl laurate  
Sodium methyl lauroyl laurate  
Sodium methylnaphthalenesulfonate  
Sodium myreth sulfate  
Sodium myristyl sulfate  
Sodium oetyl sulfate, oleyl sulfate  
Sodium POE alkyl ether acetate  
Sodium trideceth-7 carboxylate  
Sodium trideceth sulfate  
Sodium tridecyl sulfate  
Stearth-11, -30  
TEA-dodecylbenzenesulfonate  
TEA-laureth sulfate  
TEA-lauryl sulfate  
TEA-palm kernel sarcosinate

TEA-PEG-3 cocamide sulfate  
Undecylenamidopropyl betaine

**Disinfectant**

Benzalkonium chloride  
Chloropine  
Didecyltrimonium chloride  
Myristalkonium saccharinate  
Shikonin  
Sodium capryloamphoacetate  
Tea tree (Melaleuca alternifolia) oil  
p-Tertiaryphenol

**Dispersant**

Alkylated polyvinylpyrrolidone  
C20-40, C30-50, C40-60 alcohols  
Castor (Ricinus communis) oil  
Cetearth-20  
Cetyl PPG-2 isodeceth-7 carboxylate  
Cholesteryl/behenyl/ocryldodecyl lauroyl glutamate  
Decaglycerol monodiolate  
Diisocetyl dodecanedioate  
Diisostearyl adipate  
Dimethicone copolyol methyl ether  
Diocryldodecyl dimer diisoleate  
Diocryldodecyl dodecanedioate  
Ethyl hydroxymethyl oleyl oxazoline  
Glyceryl caprylate, G. caprylate/caprate  
Glyceryl diisostearate  
Hydrogenated castor oil, H. lecithin  
Hydrogenated tallow glycerides  
Isobutylene/MA copolymer  
Isocetyl alcohol  
Isopropyl C12-15-pareth-9-carboxylate  
Isostearyl neopentanoate  
Lanolin acid  
Laureth-4, -6, -16  
Melanin  
Nonoxynol-2, -18, -20, -30, -40  
Octoxynol-5, -10  
Octoxynol 16, 30, 40, 70  
Ocryldodeceth-5  
Ocryldodecyl/dimethicone copolyol citrate  
Oleth-40  
Oleyl alcohol  
PEG-5 castor oil, glyceryl sesquileate  
PEG-6 beeswax  
PEG-8/SMDI copolymer  
PEG-9 castor oil, oicete, stearate  
PEG-10 dioleate, stearamine  
PEG-12 beeswax  
PEG-12 glyceryl dioleate, laurate  
PEG-15 castor oil  
PEG-20 almond glycerides  
PEG-20 glyceryl isostearate  
PEG-20 sorbitan trisostearate  
PEG-25 castor oil  
PEG-30 dipolyhydroxystearate  
PEG-40 hydrogenated castor oil PCA isostearate  
PEG-60 shea butter glycerides  
Poloxamer 101, 122, 181, 182, 184  
Polyglyceryl-2 sesquiosostearate  
Polyglyceryl-3 diisostearate, oicete  
Polyglyceryl-5 distearate  
Polyglyceryl-6 mixed fatty acids  
Polyglyceryl-10 diisostearate, distearate  
Polyglyceryl-10 decaoleate  
Polyhydroxystearic acid  
Polysorbate 40, 80  
Potassium polyacrylate  
PPG-3 PEG-6 oleyl ether  
PPG-9 diethylmonium phosphate  
PPG-12/SMDI Copolymer  
PPG-15 stearyl ether  
PPG-25, PPG-40 diethylmonium chloride  
PPG-51/SMDI Copolymer  
PVP/eicosene copolymer  
PVP/hexadecene copolymer

## Functions

Rapeseed oil, ethoxylated high erucic acid  
 Ricinoleyl alcohol  
 Sodium ceteth-13-carboxylate  
 Sodium lignosulfonate, S. polymethacrylate  
 Sodium poly(naphthalenesulfonate)  
 Sorbitan oleate  
 Steareth-10  
 Tricetonyl PVP  
 Triisosteann PEG-6 esters  
 Trioctyldodecyl citrate

**Emollient**

Acetylated glycol stearate  
 Acetylated hydrogenated lanolin  
 Acetylated hydrogenated lard glycende  
 Acetylated hydrogenated vegetable glyceride  
 Acetylated lanolin, A.I. alcohol  
 Acetylated lard glycende  
 Acetylated monoglycerides  
 Acetylated palm kernel glycerides  
 Aleurites moluccana ethyl ester  
 Allantoin  
 Aluminum/magnesium hydroxide stearate  
 AMP-isoctearoyl hydrolyzed soy protein  
 Apricot (*Prunus armeniaca*) kernel oil  
 Arachidyl behenate  
 Argania spinosa oil  
 Avocado (*Persea gratissima*) oil, unsaponifiables  
 Avocado oil ethyl ester  
 Babassu (*Orbignya oleifera*) oil  
 Baryl isosteate, B. stearate  
 Behenamidopropyl dihydroxypropyl dimonium chloride  
 Behenoxy dimethicone  
 Behenyl alcohol, B. behenate  
 Behenyl erucate, B. isosteate  
 Benzyl laurate  
 Bladderwrack (*Fucus vesiculosus*) extract  
 Borage (*Borago officinalis*) seed oil  
 Borageamidopropyl phosphatidyl PG-dimonium chloride  
 Brain extract  
 Brazil nut (*Bertholletia excelsa*) oil  
 Butyl myristate, oleate, stearate  
 Butyloctanol  
 Butyloctyl oleate  
 C12-13, C12-16, C14-15 alcohols  
 C12-15 alcohols octanoate  
 C12-15 alkyl benzoate  
 di-C12-15 alkyl fumarate  
 C12-15 alkyl lactate  
 Camellia kiam oil  
 Tea (*Camellia sinensis*) oil  
 C10-30 cholesterol/lanosterol esters  
 Canola oil  
 Caprylic/capric triglycende  
 Caprylic/capric triglycende PEG-4 esters  
 Caprylic/capric/lauric triglycende  
 Caprylic/capric/linoleic triglycende  
 Caprylic/capric/oleic triglycendes  
 Caprylic/capric/stearic triglycende  
 Caprylic/capric/succinic triglycende  
 Capsicum frutescens oleoresin  
 Carrot (*Daucus carota sativa*) oil  
 Cashew (*Anacardium occidentale*) nut oil  
 Castor (*Ricinus communis*) oil  
 Cetearyl behenate, C. candelillate  
 Cetearyl isononanoate, C. octanoate  
 Cetearyl palmitate, C. stearate  
 Ceteth-10  
 Cetostearyl stearate  
 Cetyl C12-15 pareth-9 carboxylate  
 Cetyl acetate, C. alcohol  
 Cetyl esters, C. lactate  
 Cetyl myristate, C. octanoate  
 Cetyl oleate, C. palmitate  
 Cetyl PPG-2 isodeceth-7 carboxylate  
 Cetyl ricinoleate, C. stearate

Cetyl stearyl octanoate  
 Chia (*Salvia hispanica*) oil  
 Cholestene esters  
 Cholesterol  
 Cholesteryl/behenyl/octyldodecyl lauroyl glutamate  
 Cholesteryl hydroxystearate  
 Cholesteryl stearate  
 Choleth-24  
 C 18-70 Isoparaffin  
 C10-18, C12-18 triglycerides  
 C12-15 linear alcohols 2-ethylhexanoate  
 Cocamidopropyl PG-dimonium chloride  
 Cocoa (*Theobroma cacao*) butter  
 Coco-caprylate/caprate  
 Coco-rapeseedate  
 Coconut (*Cocos nucifera*) oil  
 Cocoyl hydrolyzed soy protein  
 Collagen phthalate  
 Colloidal oatmeal  
 Comfrey (*Symphitum officinale*) leaf extract  
 Corn (*Zea mays*) oil  
 Corn poppy (*Papaver rhoeas*) extract  
 Cottonseed (*Gossypium*) oil  
 Cuttlefish extract  
 Cyclomethicone  
 Deceth-4 phosphate  
 Decyl oleate  
 Decyltetradecanol  
 Dialkyl dimethyl polysiloxane  
 Dibutyl sebacate  
 Dicapryl adipate  
 Dicaprylyl ether, D. maleate  
 Diethylene glycol diisononanoate  
 Diethylene glycol dioctanoate  
 bis-Diglyceryl/caprylate/caprate/isosteate/  
 hydroxystearate/adipate  
 bis-Diglyceryl/caprylate/caprate/isosteareth/  
 stearate/hydroxystearate/adipate

Dihydroabietyl behenate  
 Dihydroxyethyl tallowamine oleate  
 Diisobutyl adipate  
 Disocetyl adipate, dodecanedioate  
 Disodocetyl adipate  
 Disopropyl adipate, dimer dilinoleate  
 Disoprolyl sebacate  
 Disostearyl trimethylolpropane siloxy silicate  
 Disostearyl adipate  
 Disostearyl dimer dilinoleate  
 Disostearyl fumarate, D. maleate  
 Dilinoleic acid  
 Dimethicone  
 Dimethicone copolyol  
 Dimethicone copolyol acetate, D.c. almondate  
 Dimethicone copolyol isosteate, D.c. lactate  
 Dimethicone copolyol methyl ether  
 Dimethicone copolyol phthalate  
 Dimethicone propylethylenediamine behenate  
 Dimethiconol stearate  
 Dimethyl lauramine oleate  
 Dioctyl adipate  
 Dioctyl dimer dilinoleate  
 Dioctylcyclohexane  
 Dioctyldodecyl dimer dilinoleate  
 Dioctyldodecyl dodecanedioate  
 Dioctyl maleate, D. sebacate, succinate  
 Dipentaerythritol fatty acid ester  
 Dipentaerythrityl hexacaprylate/hexacaproate  
 Dipentaerythrityl hexahydroxystearate/isosteate  
 Distearyl dimethylamine dilinoleate  
 Dtridecyl adipate  
 Dog rose (*Rosa canina*) hips oil  
 Egg (*Orum*) yolk extract  
 Emu (*Dromicurus*) oil  
 Erucyl erucate  
 Ethyl avocadoate  
 Ethylhexyl isopalmitate

## COSMETIC AND PHARMACEUTICAL INGREDIENTS

CAMPHOR USP

CARBOXYMETHYLCELLULOSE USP

CETINA (CETYL ESTERS &amp; STEARAMIDE DEAS)

SPERMWAX® (CETYL ESTERS WAX)

CHOLESTEROL NF

DENATONIUM BENZOATE NF

GLYCINE USP

IPG (ISOPENTYLDIOL)

MENTHOL USP

ROBANE (SQUALANE NF)

SUPRAENE® (SQUALENE)

UREA PEROXIDE USP

ROBECO INC.

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 212-986-6410  
 FAX 212-986-6419

OUR 78<sup>TH</sup> YEAR

## Functions

2-Ethylhexyl isostearate	Isononyl isononanoate	Octyldodecanol
Ethyl linolenate, E. myristate	Isopentylidol	Octyldodecyl behenate, O. benzoate
Ethyl monthuate, E. myristate	Isopropyl avocadate	Octyldodecyl erucate, O. myristate
Ethyl oleate, E. olivate	Isopropyl C12-15-pareth-9-carboxylate	Octyldodecyl oleate, O. ricinoleate
Evening primrose ( <i>Oenothera biennis</i> ) extract, oil	Isopropyl isostearate	Octyldodecyl stearate
Glycereth-4,5-lactate	Isopropyl isostearate	bis-Octyldodecyl stearoyl dimer diisoleate
Glycereth-5 lactate	Isopropyl lanolate, I. linoleate	Octyldodecyl stearoyl stearate
Glycereth-7 benzoate	Isopropyl myristate, I. palmitate	Oleamine oxide
Glycereth-7 diisononanoate	Isopropyl PPG-2-isodeceth-7 carboxylate	Oleic/palmitoleic/linoleic glycerides
Glycereth-7 triacetate	Isopropyl stearate	Oleic alcohol
Glycereth-7 trioctanoate	Isosorbide laurate	Oleostearne
Glycereth-12, -26	Isostearic acid	Oleyl alcohol, O. erucate, O. oleate
Glycerol tricaprylate/caprate	Isostearyl alcohol	Olive ( <i>Olea europaea</i> ) oil
Glyceryl adipate, G. dioleate	Isostearyl behenate, I. benzoate	Orange ( <i>Citrus aurantium dulcis</i> ) peel wax
Glyceryl isostearate, G. lanolate	Isostearyl diglyceryl succinate	Orange roughy ( <i>Hoplostethus atlanticus</i> ) oil
Glyceryl linoleate, G. monopyroglutamate	Isostearyl erucate, I. erucyl erucate	Palm ( <i>Elaeis guineensis</i> ) oil
Glyceryl myristate, G. oleate	Isostearyl isostearate, I. lactate	Palm kernel glycerides
Glyceryl ricinoleate	Isostearyl malate, I. myristate	Palmitic acid
Glyceryl triacetol hydroxystearate	Isostearyl neopentanoate, palmitate	Panthenyl triacetate
Glyceryl triacetol ricinoleate	Isostearyl stearoyl stearate	Partially hydrogenated canola oil
Glycosaminoglycans	Isostearylaminopropyl dihydroxypropyl dimonium chloride	Partially hydrogenated soybean oil
Glycosphingolipids	Isotridecyl isononanoate	Peach ( <i>Prunus persica</i> ) extract
Gold of Pleasure oil	Isotridecyl myristate	Peanut ( <i>Arachis hypogaea</i> ) oil
Grape ( <i>Vitis vinifera</i> ) seed oil	Jojoba ( <i>Buxus chinensis</i> ) oil	Pecan ( <i>Carya illinoensis</i> ) oil
Hazel ( <i>Corylus avellana</i> ) nut oil	Jojoba butter, J. esters	PEG-2 diisononanoate, P. dioctanoate
Helianthus annuus ethyl ester	Jojoba oil, synthetic	PEG-2 milk solids
Hexadecyl isopalmitate	Kukui ( <i>Aleurites moluccana</i> ) nut oil	PEG-4
Hexamethyldisiloxane	Lactamide DGA	PEG-4 dibehenate, P. dilaurate
Hexyl laurate	Laneth-10 acetate	PEG-5 C3-12 alcohols citrate
Hexyldodecanol	Lanolin, L. acid	PEG-5 C14-18 alcohols citrate
Hexyldodecyl stearate	Lanolin alcohol, L. oil	PEG-5 hydrogenated castor oil
Honey extract	Lanolin, ultra anhydrous	PEG-5 hydrogenated castor oil trisostearate
Hybrid safflower ( <i>Carthamus tinctorius</i> ) oil	Lanolin wax	PEG-6
Hybrid sunflower ( <i>Helianthus annuus</i> ) oil	Lanosterol	PEG-6 capric/caprylic glycerides
Hydrogenated C6-14 olefin polymers	Lard glyceride	PEG-7 glyceryl cocoate
Hydrogenated castor oil	Laureth-2, -3	PEG-8
Hydrogenated castor oil laurate	Laureth-2 acetate, L. benzoate	PEG-8 dilaurate, P. dioleate
Hydrogenated coconut oil	Laureth-2-octanoate	PEG-8/SMDI copolymer
Hydrogenated cottonseed oil	Lauric/palmitic/oleic triglyceride	PEG-9 stearyl stearate
Hydrogenated C12-18 triglycerides	Lauryl behenate, L. lactate	PEG-10 stearyl stearate
Hydrogenated lanolin	Lauryl phosphate	PEG-12
Hydrogenated lanolin, distilled	Lauryl dimethylamine isostearate	PEG-12 dioleate, P. palm kernel glycerides
Hydrogenated lecithin	Lesquerella fendleri oil	PEG-15 cocamine oleate/phosphate
Hydrogenated milk lipids	Linoleic acid	PEG-18
Hydrogenated mink oil	Macadamia ternifolia nut oil	PEG-20
Hydrogenated palm kernel glycerides	Maleated soybean oil	PEG-20 hydrogenated castor oil isostearate
Hydrogenated palm oil	Mango ( <i>Magnifera indica</i> ) oil, seed oil	PEG-20 hydrogenated castor oil trisostearate
Hydrogenated polyisobutene	Mango kernel oil	PEG-20 hydrogenated lanolin
Hydrogenated soybean oil	Meadowfoam ( <i>Limnanthes alba</i> ) seed oil	PEG-24 hydrogenated lanolin
Hydrogenated starch hydrolysate	Menhaden ( <i>Brevoortia tyrannus</i> ) oil	PEG-25 PABA, P. propylene glycol stearate
Hydrogenated tallow glyceride	Methyl acetyl ricinoleate	PEG-40 glyceryl laurate
Hydrogenated tallow glyceride lactate	Methyl gluceth-20	PEG-40 hydrogenated castor oil isostearate
Hydrogenated turtle oil	Methyl gluceth-20 benzoate, M. g. distearate	PEG-40 hydrogenated castor oil laurate
Hydrogenated vegetable glycerides	Methyl hydroxystearate, M. ricinoleate	PEG-40 hydrogenated castor oil trisostearate
Hydrogenated vegetable oil	Microcrystalline wax	PEG-40 jojoba oil
Hydrolyzed collagen	Mineral oil ( <i>Paraffinum liquidum</i> )	PEG-50 hydrogenated castor oil laurate
Hydrolyzed conchiorin protein	Mink oil	PEG-50 hydrogenated castor oil trisostearate
Hydrolyzed keratin	Musk rose ( <i>Rosa moschata</i> ) oil	PEG-60 shea butter glycerides
Hydrolyzed mushroom ( <i>Tricholoma matsutake</i> ) extract	Myreth-3	PEG-70 mango glycerides
Hydrolyzed oat protein	Myreth-3 caprate, M. laurate	PEG-75
Hydroxylated lanolin	Myreth-3 myristate, M. octanoate	PEG-75 lanolin, P. shea butter glycerides
Hydroxylated milk glycerides	Myristyl alcohol, M. lactate	PEG-75 shea butter glycerides
Hydroxystearic acid	Myristyl myristate, M. octanoate	PEG-150
Illipe butter	Myristyl propionate, M. stearate	PEG/PPG-17/6 copolymer
Isobutyl palmitate, I. stearate	Neatsfoot oil	Pentaerythrityl dioleate
Isocetyl behenate, I. octanoate	Nem ( <i>Melia azadirachta</i> ) seed oil	Pentaerythrityl isostearate/caprate/caprylate/adipate
Isocetyl palmitate, I. salicylate	Neopenryl glycol dicaprate	Pentaerythrityl stearate
Isocetyl stearate	Neopenryl glycol dicaprate/dicaprylate	Pentaerythrityl stearate/caprate/caprylate/adipate
Isodeceth-2 cocoate	Neopenryl glycol diisooctanoate	Pentaerythrityl tetracaprylate/tetracaprate
Isodecyl citrate, I. cocoate	Neopenryl glycol dioctanoate	Pentaerythrityl tetraisononanoate, P. tetraisostearate
Isodecyl isononanoate, I. laurate	Oat ( <i>Avena sativa</i> ) bran extract, extract, flour	Pentaerythrityl tetralaureate, P. tetraoctanoate
Isodecyl neopentanoate	Octacosanyl stearate	Pentaerythrityl tetraoleate, P. tetrapelargonate
Isodecyl octanoate, I. oleate	Octyl cocoate	Pentaerythrityl tetrastearate
Isodecyl stearate	Octyl hydroxystearate, O. isononanoate	Perfluorodecalin
Isododecane	Octyl neopentanoate, O. octanoate	Perfluoropolyethylisopropyl ether
Isocicosane	Octyl oleate, O. palmitate	Petrolatum
Isohexadecane	Octyl pelargonate, O. stearate	Phenethyl dimethicone
	Octyldodecanol	Phenyl dimethicone, P. methicone, P. trimethicone



## Functions

Phytantriol	PPG-8/SMDI copolymer	Propylene glycol myristyl ether acetate
Pistachio (Pistacia vera) nut oil	PPG-9	Propylene glycol stearate, SE
Placental enzymes	PPG-9-buteth-12	Pumpkin (Cucurbita pepo) seed oil
Pollen extract	PPG-9 butyl ether	Quinoa (Chenopodium quinoa) oil
Poloxamer 105 benzoate	PPG-10 butanediol, P. cetyl ether	Rapeseed (Brassica campestries) oil
Poloxamer 182 dibenzoate	PPG-10 methyl glucose ether	Rice (Oryza sativa) bran oil, bran wax
Polybutene	PPG-10 oleyl ether	Rice fatty acid
Polydecene	PPG-11 stearyl ether	Safflower (Carthamus tinctorius) oil
Polydimethicone copolyol	PPG-12-buteth-16	Salmon (Salmo) egg extract
Polyethylene glycol	PPG-12-PEG-50 lanolin	Sesame (Sesamum indicum) oil
Polyglyceryl-2 diisostearate, P. tetraistearate	PPG-12-PEG-65 lanolin oil	Shark liver oil
Polyglyceryl-2 trisostearate	PPG-12/SMDI Copolymer	Shea butter (Butyrospermum parkii)
Polyglyceryl-3 diisostearate, P. oleate	PPG-14 butyl ether	Shea butter (Butyrospermum parkii) extract
Polyglyceryl-3 stearate	PPG-15 butyl ether, P. stearyl ether	Shea butter, ethoxylated
Polyglyceryl-6 dioleate	PPG-15 stearyl ether benzoate	Shorea stenoptera butter
Polyglyceryl-10 decaoleate, P. decastearate	PPG-16 butyl ether	Silybum marianum ethyl ester
Polyglyceryl-10 tetraoleate	PPG-18 butyl ether	Sitostearyl acetate
Polyisobutene	PPG-20	Skin lipids
Polyisobutene/isohexapentacontanectane	PPG-20-buteth-30	Slippery elm extract
Polyisobutene/isooctahexacontane	PPG-20 cetyl ether	Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate
Polyisobutene/isopentacontaoctane	PPG-24-glycereth-24	Sodium carboxymethyl beta-glucan
Polyisoprene	PPG-26	Sodium ceteth-13-carboxylate
Polyoxyethylene polyoxypropylene glycol	PPG-27 glyceryl ether	Sodium dimethicone copolyol acetyl methyltaurate
Polyquaternium-2	PPG-28-buteth-35	Sodium glyceryl oleate phosphate
Polysiloxane polyalkylene copolymer	PPG-30	Sodium hyaluronate, S. polymethacrylate
Polysorbate 40	PPG-30 cetyl ether	Sorboth-20
Potassium dimethicone copolyol phosphate	PPG-40 butyl ether	Sorbitan isostearate, S. palmitate
PPG-2-buteth-3	PPG-50 cetyl ether, P. oleyl ether	Sorbitan sesquioleate, S. sesquisteate
PPG-2 lanolin alcohol ether	PPG-51/SMDI Copolymer	Sorbitan trioleate
PPG-2 myristyl ether propionate	PPG-53 butyl ether	Soybean (Glycine soja) oil
PPG-3 hydrogenated castor oil	Propylene glycol ceteth-3 acetate	Spermaceti
PPG-3 myristyl ether	Propylene glycol dicaprylate	Sphingolipids
PPG-5-buteth-7	Propylene glycol dicaprylate/dicaprate	Squalene
PPG-5-laureth-5	Propylene glycol diisostearate, P.g. dioctanoate	Stearamidopropyl cetearyl dimonium tosylate
PPG-5 butyl ether	Propylene glycol dipalargonate	Stearth-4 stearate
PPG-5 lanolin wax	Propylene glycol isoceteth-3 acetate	Stearic acid, S. hydrazide
PPG-5 pentaerythrityl ether	Propylene glycol isostearate, P.g. laurate	Stearoxy dimethicone
PPG-7-buteth-10	Propylene glycol myristate	

# ANIMAL VEGET?

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## Functions

Stearoxymethicone/dimethicone copolymer  
 Stearyl behenate. S. benzoate  
 Stearyl dimethicone. S. erucate  
 Stearyl heptanoate. S. propionate  
 Stearyl stearate  
 Stearyl stearyl stearate  
 Sucrose cocoate  
 Sunflower (Helianthus annuus) seed oil  
 Sweet almond (Prunus amygdalus dulcis) oil  
 Sweet cherry (Prunus avium) pit oil  
 Synthetic jojoba oil  
 Synthetic wax  
 Tallow  
 Tetradecyleicosyl stearate  
 Tocopheryl acetate  
 Tricaprin  
 Tricaprylin  
 Tricaprylyl citrate  
 Tricholoma matsutake extract  
 Tridecyl behenate. T. cocoate  
 Tridecyl erucate. T. neopentanoate  
 Tridecyl octanoate. T. stearate  
 Tridecyl stearyl stearate  
 Tridecyl trimellitate  
 Trihexyldecyl citrate  
 Trisocetyl citrate  
 Trisostearam  
 Trisostearyl citrate  
 Trisostearyl trilinoleate  
 Trilaun  
 Trilinolein  
 Trimethylolpropane triacrylate/tricaprate  
 Trimethylolpropane triococotate  
 Trimethylolpropane trioleate  
 Trimyrstin  
 Triolein  
 Triolein  
 Triolein  
 Tripropylene glycol citrate  
 Tristearin  
 Triundecanol  
 Vegetable oil  
 Walnut (Juglans regia) oil  
 Wheat (Triticum vulgare) germ oil

**Emulsifier**

Acetylated hydrogenated lard glyceride  
 Acetylated hydrogenated vegetable glyceride  
 Acetylated monoglycerides  
 Acrylates/C10-C30 alkyl acrylate crosspolymer  
 Acrylates/vinyl isodecanoate crosspolymer  
 Acrylic acid/acrylonitril copolymer  
 2-Aminobutanol  
 Ammonium acrylates/acrylonitril copolymer  
 Arachidyl alcohol  
 Beeswax  
 Behenamidopropyl dihydroxypropyl dimonium chloride  
 Beheneth-5 -10 -20 -30  
 Behenic acid  
 Behenyl betaine  
 Borgeamidopropyl phosphatidyl PG-dimonium chloride  
 Butyloctanol  
 C12-20 acid PEG-8 ester  
 C18-36 acid  
 Calcium dodecylbenzene sulfonate  
 Calcium protein complex

Calcium stearate  
 Calcium stearyl lactylate  
 Capramide DEA  
 Caprylic/capric acid  
 Caprylic/capric glycerides  
 Castor oil, ethoxylated  
 Cetalkonium chloride  
 Cetareth-2 -4 -5 -6  
 Cetareth-2 phosphate  
 Cetareth-5 phosphate  
 Cetareth-8 -10 -11 -12  
 Cetareth-10 phosphate  
 Cetareth-15 -17 -20 -25  
 Cetareth-27 -29 -30 -34  
 Cetearyl alcohol  
 Cetearyl glucoside  
 Ceteth-2 -4 -6 -10 -12 -13  
 Ceteth-16 -20 -25 -30 -33  
 Cetethydimonium bromide  
 Cetrimonium chloride  
 Cetyl dimethicone copolyol  
 Cetyl phosphate  
 Cholesterol  
 Choleth-10 -15 -24  
 Cocamide DEA. C. MEA  
 Cocamidopropyl dimethylamine  
 Cocamidopropyl PG-dimonium chloride phosphate  
 Cocamine  
 Coceth-7 carboxylic acid  
 Coconut acid  
 Copper protein complex  
 Cottonseed glyceride  
 C12-13 parath-3 -4 -9 -23  
 C16-18 parath-3 -5.5 -13 -19  
 Cyclodextrin  
 Decaglycerol monodiolate  
 DEA-cetareth-2-phosphate  
 DEA-cetyl phosphate  
 DEA-cyclocarboxypropyloleate  
 DEA-oleth-3 phosphate  
 DEA-oleth-5-phosphate  
 DEA oleth-10 phosphate  
 DEA-oleth-20-phosphate  
 Dicetareth-10 phosphoric acid  
 Diethanolamine  
 Diethylaminoethyl stearate  
 Diglyceryl stearate malate  
 Dihydrocholeth-15 -20 -30  
 Dihydrogenated tallow phthalic acid amide  
 Dilauryl acetyl dimonium chloride  
 Dilinoleamidopropyl dimethylamine dimethicone copolyol phosphate  
 Dilinoleic acid  
 Dimethicone copolyol almondate  
 Dimethicone copolyol isostearate  
 Dimethicone copolyol laurate  
 Dimethicone copolyol methyl ether  
 Dimethicone copolyol olivate  
 Dimethicone copolyol phthalate  
 Dipalmitoylethyl hydroxyethylmonium methosulfate  
 Dipropylene glycol  
 Disodium hydrogenated cottonseed glyceride sulfosuccinate  
 Disodium ricinoleamide MEA-sulfosuccinate  
 Disodium stearyl sulfosuccinate  
 Disodium sulfosuccinamide  
 Discearyl phthalic acid amide

N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
 Dodecylphenol-ethylene oxide condensate  
 Egg (Ovum) yolk extract  
 Emulsifying wax NF  
 Ethoxylated fatty alcohol  
 N-Ethylether-bis-1-(N-isostearylaminodipropyl-N,N-dimethyl ammonium chlo  
 Ethyl hexanediol  
 Eugenia gracilis polysaccharide  
 Glyceth-26 phosphate  
 Glyceryl caprylate. G. caprylate/caprate  
 Glyceryl citrate/lactate/linoleate/oleate  
 Glyceryl cocoate. G. dilaurate  
 Glyceryl dilaurate. G. dioleate  
 Glyceryl distearate. G. hydroxystearate  
 Glyceryl isostearate. G. lanolate  
 Glyceryl laurate. G. linoleate  
 Glyceryl mono-di-tri-caprylate  
 Glyceryl myristate. G. oleate  
 Glyceryl palmitate. G. ricinoleate  
 Glyceryl ricinoleate SE  
 Glyceryl stearate. G. stearate citrate  
 Glyceryl stearate lactate  
 Glyceryl stearate SE  
 Glyceryl undecylenate  
 Glycol distearate. G. oleate  
 Glycol palmitate. G. stearate  
 Glycol stearate SE  
 Glycolamide stearate  
 Glycosphingolipids  
 Hydrogenated coco-glycerides  
 Hydrogenated cottonseed glyceride  
 Hydrogenated lanolin  
 Hydrogenated lecithin  
 Hydrogenated palm oil  
 Hydrogenated soy glyceride  
 Hydrogenated tallow glycerides  
 Hydrogenated tallow glycerides citrate  
 Hydroxycetyl phosphate  
 Hydroxylated lanolin  
 Hydroxylated lecithin  
 Hydroxyoctacosanyl hydroxystearate  
 Hydroxypropyl-bis-  
 isostearylamidopropylidimonium chloride  
 Isocetareth-8 stearate  
 Isoceteth-10 stearate  
 Isoceteth-20  
 Isocetyl alcohol  
 Isooleureth-6  
 Isostearamidopropyl dimethylamine gluconate  
 Isostearamidopropyl dimethylamine glycolate  
 Isostearamidopropyl laurylacetodimonium chloride  
 Isosteareth-2 -3 -10 -12 -20 -22 -50  
 Isosteareth-2-octanoate  
 Isosteareth-10 stearate  
 Isosteane acid  
 Isostearyl diglyceryl succinate  
 Isostearylaminodipropyl dihydroxypropyl dimonium chloride  
 Karaya (Sterculia urens) gum  
 Laneth-5 -10 -15 -16 -20 -40  
 Laneth-10 acetate  
 Lanolin  
 Lanolin alcohol  
 Lanolin, ultra anhydrous  
 Lanolin wax  
 Lauramide DEA. L. MEA

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## Functions

Laureamidopropyl dimethylamine	PEG-5 lanolate, P. oleamine	PEG-20 lanolin, P. laurate
Laureamidopropyl PG-dimonium chloride	PEG-5 soy sterol, P. soyamine	PEG-20 oleate
Laureth-1 -2 -3 -4 -5	PEG-5 stearamine, P. stearate	PEG-20 methyl glucose sesquisteate
Laureth-2-octanoate	PEG-5 tallow amine	PEG-20 sorbitan beeswax
Laureth-3 phosphate	PEG-6 capric/caprylic glycerides	PEG-20 sorbitan isostearate
Laureth-4 carboxylic acid	PEG-6 cocamine	PEG-20 sorbitan triisostearate
Laureth-5 carboxylic acid	PEG-6 C12-14 ether	PEG-20 sorbitan trioleate
Laureth-6 -7 -9 -11 -12	PEG-6 dilaurate, P. dioleate	PEG-20 stearate, P. tallow amine
Laureth-11 carboxylic acid	PEG-6 distearate, P. isostearate	PEG-23 oleate, P. stearate
Laureth-16 -20 -23 -25 -30	PEG-6 lauramide, P. laurate	PEG-24 hydrogenated lanolin
Lauryl PCA	PEG-6 oleate, P. palmitate	PEG-25 castor oil
Laurylmethicone copolyol	PEG-6 sorbitan beeswax	PEG-25 phytosterol
Lecithin	PEG-6 sorbitan laurate	PEG-25 propylene glycol stearate
Linoleamidopropyl PG-dimonium chloride	PEG-6 sorbitan oleate	PEG-25 soy sterol, P. stearate
phosphate	PEG-6 sorbitan stearate	PEG-29 castor oil
Lithium stearate	PEG-6 stearate	PEG-30 castor oil
Magnesium sulfate hepta-hydrate	PEG-6-32	PEG-30 dipolyhydroxystearate
Maleated soybean oil	PEG-6-32 stearate	PEG-30 glyceryl cocoate
Methoxy PEG-17-dodecyl glycol copolymer	PEG-7 glyceryl cocoate	PEG-30 glyceryl isostearate
Methyl gluceth-20 distearate	PEG-7 hydrogenated castor oil	PEG-30 glyceryl laurate
Methyl glucose dioleate, M. g. sesquisteate	PEG-7 oleate	PEG-30 glyceryl oleate
Methyl glucose sesquisteate	PEG-7.5 tallowamine	PEG-30 glyceryl stearate
MEA-laureth sulfate	PEG-8	PEG-30 hydrogenated castor oil
Myreth-3 -4 -7	PEG-8 beeswax, P. castor oil	PEG-30 lanolin
Myreth-3 myristate	PEG-8 C12-14 ether	PEG-30 sorbitan tetraoleate
Myristamidopropyl dimethylamine	PEG-8 dilaurate, P. dioleate	PEG-32 dilaurate, P. dioleate
Nonoxynol-1 -2 -4 -5 -6 -7	PEG-8 distearate	PEG-32 distearate, P. laurate
Nonoxynol-8 -9 -10 -11 -12 -13	PEG-8 glyceryl laurate	PEG-32 oleate, P. stearate
Nonoxynol-14 -15 -18 -20 -30 -40 -50	PEG-8 laurate, P. oleate	PEG-33 castor oil
Nonyl nonoxynol-5 -10	PEG-8, P. tallate	PEG-35 castor oil, P. stearate
Oat (Avena sativa) flour	PEG-9 castor oil	PEG-40 castor oil
Octoxynol-1 -3 -5 -8 -10	PEG-9 diisostearate	PEG-40 glyceryl isostearate
Octoxynol 16, 30, 40	PEG-9 dioleate, P. distearate	PEG-40 glyceryl laurate
2-Octyl dodecyl alcohol	PEG-9 laurate, P. oleate	PEG-40 glyceryl triisostearate
Ocetyl dodecanol	PEG-9 stearate	PEG-40 hydrogenated castor oil
Ocetyldodeceth-20 -25	PEG-10 castor oil, P. cocamine	PEG-40 hydrogenated castor oil PCA isostearate
Oleamide DEA	PEG-10 coconut oil esters	PEG-40 sorbitan diisostearate
Oleamidopropyl dimethylamine	PEG-10 C12-18 alcohols	PEG-40 sorbitan lanolate
Oleamine oxide	PEG-10 dioleate	PEG-40 sorbitan tetraoleate
Oleic acid	PEG-10 glyceryl isostearate	PEG-40 stearate
Oleth-2 -3 -4 -5 -6 -7 -8 -9	PEG-10 hydrogenated castor oil	PEG-40/dodecyl glycol copolymer
Oleth-10 -12 -15 -20 -23	PEG-10 hydrogenated castor oil triisostearate	PEG-42 babassu glycerides
Oleth-25 -30 -40 -50	PEG-10 lanolate	PEG-44 sorbitan laurate
Oleth 13	PEG-10 polyglyceryl-2 laurate	PEG-45 palm kernel glycerides
Oleth-2 phosphate	PEG-10 sorbitan laurate	PEG-45 safflower glycerides
Oleth-3 phosphate	PEG-10 soy sterol, P. stearamine	PEG-50 lanolin, P. stearamine
Oleth-5 phosphate	PEG-10 stearate	PEG-50 stearate
Oleth-10 phosphate	PEG-11 babassu glycerides	PEG-60 almond glycerides
Oleth-20 phosphate	PEG-11 castor oil	PEG-60 castor oil
Palm acid	PEG-12 dilaurate, P. dioleate	PEG-60 corn glycerides
Palmitamidopropyl dimethylamine	PEG-12 distearate	PEG-60 glyceryl triisostearate
Palmitic acid	PEG-12 glyceryl dioleate	PEG-60 hydrogenated castor oil
PEG-2 cocamine, P. distearate	PEG-12 laurate, P. oleate	PEG-60 hydrogenated castor oil isostearate
PEG-2 hydrogenated tallow amine	PEG-12 stearate, P. tallate	PEG-60 hydrogenated castor oil triisostearate
PEG-2 laurate, P. laurate SE	PEG-14 avocado glycerides	PEG-60 shea butter glycerides
PEG-2 oleamine, P. oleate	PEG-15 castor oil	PEG-60 sorbitan tetraoleate
PEG-2 soyamine, P. stearamine	PEG-15 cocamine	PEG-70 mango glycerides
PEG-2 stearate, P. stearate SE	PEG-15 glyceryl isostearate	PEG-75
PEG-3 cocamide	PEG-15 glyceryl laurate	PEG-75 castor oil, P. dilaurate
PEG-3 C12-18 alcohols	PEG-15 glyceryl ricinoleate	PEG-75 dioleate, P. distearate
PEG-3 glyceryl isostearate	PEG-15 oleamine, P. oleate	PEG-75 lanolin, P. laurate
PEG-3 glyceryl triisostearate	PEG-15, P. stearamine	PEG-75 oleate
PEG-3 glyceryl tristearate	PEG-15 tallow amine	PEG-75 shea butter glycerides
PEG-3 lanolate, P. sorbitan oleate	PEG-15 tallow polyamine	PEG-75 shorea butter glycerides
PEG-3 stearate	PEG-16	PEG-75 stearate
PEG-4 dioleate, P. diisostearate	PEG-16 hydrogenated castor oil	PEG-80 sorbitan laurate
PEG-4 dilaurate, P. distearate	PEG-16 soy sterol	PEG-90 stearate
PEG-4 glyceryl distearate	PEG-18 stearate	PEG-100 castor oil
PEG-4 laurate, P. oleate	PEG-20 almond glycerides	PEG-100 hydrogenated castor oil
PEG-4 stearate	PEG-20 castor oil, P. dilaurate	PEG-100 lanolin, P. stearate
PEG-4 stearyl stearate	PEG-20 dioleate, P. distearate	PEG-120 distearate
PEG-4 tallate	PEG-20 glyceryl laurate	PEG-150 dilaurate, P. dioleate
PEG-5 castor oil, P. cocamine	PEG-20 glyceryl oleate	PEG-150 distearate, P. lanolin
PEG-5 C12-C18 alcohols	PEG-20 glyceryl stearate	PEG-150 laurate, P. oleate
PEG-5 glyceryl isostearate	PEG-20 glyceryl triisostearate	PEG-150 stearate
PEG-5 glyceryl sesquioleate	PEG-20 glyceryl tristearate	PEG-200 castor oil
PEG-5 glyceryl stearate	PEG-20 hydrogenated castor oil	PEG-200 glyceryl stearate
PEG-5 glyceryl triisostearate	PEG-20 hydrogenated lanolin	PEG-200 hydrogenated castor oil

## Functions

PEG-200 laurate, P. oleate  
 PEG-400 laurate  
 Phosphate esters  
 Phosphated amine oxides  
 Phospholipids  
 Poloxamer 101, 116, 122, 123, 124  
 Poloxamer 181, 182, 184, 185, 235, 237  
 Poloxamer 238, 334, 338, 407  
 Polyglyceryl-2 oleate  
 Polyglyceryl-2 polyhydroxystearate  
 Polyglyceryl-2 sesquiisostearate  
 Polyglyceryl-2 stearate  
 Polyglyceryl-2-PEF-4-distearate  
 Polyglyceryl-2-PEF-4-stearate  
 Polyglyceryl-3 diisostearate, P. dioleate  
 Polyglyceryl-3 distearate  
 Polyglyceryl-3 methylglucose distearate  
 Polyglyceryl-3 oleate, P. polyricinoleate  
 Polyglyceryl-3 stearate  
 Polyglyceryl-4 oleate, P. stearate  
 Polyglyceryl-6 dioleate, P. distearate  
 Polyglyceryl-6 laurate, P. myristate  
 Polyglyceryl-6 oleate, P. polyricinoleate  
 Polyglyceryl-6 stearate  
 Polyglyceryl-8 oleate  
 Polyglyceryl-10 decaoleate  
 Polyglyceryl-10 diisostearate  
 Polyglyceryl-10 dioleate, P. dipalmitate  
 Polyglyceryl-10 distearate, P. isostearate  
 Polyglyceryl-10 laurate, P. linoleate  
 Polyglyceryl-10 mixed fatty acids  
 Polyglyceryl-10 myristate  
 Polyglyceryl-10 oleate  
 Polyglyceryl-10 pentastearate  
 Polyglyceryl-10 stearate  
 Polyglyceryl-10 tetraoleate  
 Polyglyceryl-10 trioleate  
 Polyoxyethylene polyoxypropylene glycol  
 Polyquaternium-5, -11  
 Polysorbate 20, 21, 40, 60, 61  
 Polysorbate 65, 80, 81, 85  
 Potassium alginate, P. cetyl phosphate  
 Potassium laurate, P. myristate  
 Potassium tallowate  
 PPG-1-PEG-9 lauryl glycol ether  
 PPG-2-ceteareth-9  
 PPG-3 isosteareth-9  
 PPG-3 PEG-6 oleyl ether  
 PPG-5-buteth-7  
 PPG-5-ceteth-20  
 PPG-5-ceteth-10 phosphate  
 PPG-8 oleate  
 PPG-10 cetyl ether phosphate  
 PPG-12-PEG-50 lanolin  
 PPG-15 stearyl ether  
 PPG-24-buteth-27  
 PPG-25 laurith-25  
 PPG-26-buteth-26  
 PPG-26 oleate  
 PPG-36 oleate  
 Propylene glycol alenate, P.g. dioleate  
 Propylene glycol hydroxystearate  
 Propylene glycol laurate, P.g. ricinoleate  
 Propylene glycol ricinoleate SE  
 Propylene glycol stearate  
 Propylene glycol stearate, SE  
 Quaternium-33  
 Rapeseedamidopropyl ethyldimonium ethosulfate  
 Rice (Oryza sativa) bran wax  
 Ricinoleamide DEA  
 Ricinoleic acid  
 Saponins  
 Selenium protein complex  
 Silicone quaternium-5, -6  
 Sodium acrylates/vinyl undecanoate crosspolymer  
 Sodium capryl lactylate  
 Sodium carboxymethyl cellulose  
 Sodium cetyl sulfate

Sodium C12-15 pareth-15 sulfonate  
 Sodium isostearoyl lactylate  
 Sodium laurth-17 carboxylate  
 Sodium lauroyl lactylate  
 Sodium lauryl sulfate  
 Sodium nonoxynol-6 phosphate  
 Sodium octyl sulfate  
 Sodium oleate  
 Sodium oleyl sulfate  
 Sodium phosphate  
 Sodium stearyl lactylate  
 Sorbeth-20  
 Sorbitan isostearate, S. laurate  
 Sorbitan oleate, S. palmitate  
 Sorbitan sesquiisostearate  
 Sorbitan sesquioleate, S. sesquisteate  
 Sorbitan stearate, S. trisostearate  
 Sorbitan trioleate, S. tristearate  
 Soyamidopropyl dimethylamine  
 Soyamine  
 Stearamide DEA  
 Stearamide DIBA-stearate  
 Stearamidoethyl diethylamine  
 Stearamidopropyl dimethylamine lactate  
 Stearamidopropyl PG-dimonium chloride phosphate  
 Stearamine  
 Stearamine oxide  
 Steareth-2, -4, -6, -7, -10, -11, -13  
 Steareth-2 phosphate  
 Steareth-15, -20, -21, -30, -100  
 Stearic acid  
 Sucrose cococate, S. distearate  
 Sucrose stearate  
 Synthetic beeswax  
 Tallow glyceride, acetylated hydrogenated  
 Tallowamide DEA

Tallowamidopropyl dimethylamine  
 Talloweth-6  
 Tetrasodium dicarboxyethyl stearyl sulfosuccinamide  
 TEA-acrylates/acrylonitril copolymer  
 Tissue extract  
 Tricetareth-4 phosphate  
 Trideceth-3, -5, -6, -7, -8  
 Trideceth-9, -10, -12, -15  
 Tridecyl ethoxylate  
 Triethanolamine  
 Trilaureth-4 phosphate  
 Triolein  
 Trisodium HEDTA  
 Tristearin

**Enzyme**

Fermented vegetable  
 Ganoderma lucidum oil  
 Lipase  
 Papain  
 Soy (Glycine soja) protein  
 Superoxide dismutase

**Essential oil**

Aesculus chinensis extract  
 Artemisia apiacea extract  
 Brassica rapa-depressa extract  
 Caraway (Carum carvi) oil  
 Cardamon (Elettaria cardamomum) oil  
 Clove (Eugenia caryophyllus) oil  
 Eclipta alba extract  
 Eucalyptus globulus oil  
 Euphorium fortunei extract  
 Euterpe precatoria extract  
 Hierochloa odorata extract  
 Kadsura heteroloca extract



**Trivent Chemical Company, Inc.**

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## Functions

Ligustrum lucidum extract  
 Lysimachia foenum-graecum extract  
 Melaleuca bracteata extract  
 Melaleuca hypericifolia extract  
 Melaleuca symphyocaro extract  
 Melaleuca uncinata extract  
 Melaleuca wilsonii extract  
 Nasturtium sinensis extract  
 Nelumbium speciosum extract  
 Paulownia imperialis extract  
 Rosemary (Rosmarinus officinalis) oil  
 Selinum spp. extract  
 Trichomonas japonica extract  
 Withania somniferum extract  
 Yuzu oil  
 Ziziphus jujuba extract

**Exfoliant**

Apricot (Prunus armeniaca) kernel powder  
 Glycolic acid  
 Jojoba (Buxus chinensis) seed powder  
 Lactic acid  
 Papain  
 PEG 11-Avocado Glycerides  
 Willow (Salix alba) bark extract

**Fiber**

Corn (Zea mays) cob powder  
 Nylon-66  
 Oat (Avena sativa) bran, meal  
 Rayon

**Film former**

Acetylated lanolin  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylacrylamide copolymer  
 Acrylates copolymer  
 Alkylated polyvinylpyrrolidone  
 Ammonium acrylates/acrylonitril copolymer  
 Betaglucon  
 Bladderwrack (Fucus vesiculosus) extract  
 Carboxymethylchitosan  
 N,O-Carboxymethylchitosonium  
 Chitosan lactate  
 Collagen  
 Collagen phthalate  
 Colloidal oatmeal  
 Desamido collagen  
 Diisostearyl trimethylolpropane siloxy silicate  
 DMHF  
 Ethyl ester of hydrolyzed silk  
 Ethylcellulose  
 Gellan gum  
 Glycerin/diethylene glycol/adipate crosspolymer  
 High beta-glucan barley flour  
 Hydrolyzed collagen  
 Hydrolyzed keratin  
 Hydrolyzed oat protein  
 Hydrolyzed pea protein  
 Hydrolyzed reticulin  
 Hydrolyzed RNA  
 Hydrolyzed silk  
 Hydrolyzed soy protein  
 Hydrolyzed wheat protein  
 Hydrolyzed wheat protein/dimethicone copolyol phosphate copolymer  
 Hydrolyzed wheat protein/PVP copolymer  
 Hydroxypropylcellulose  
 Hydroxypropyltrimonium gelatin  
 Jojoba (Buxus chinensis) oil  
 Lactoglobulin  
 Myristoyl hydrolyzed collagen  
 Nitrocellulose  
 Oat (Avena sativa) extract, protein  
 Polyethylene, ionomer  
 Polyquaternium-6, -7, -11, -22, -39  
 Polyvinyl acetate, P. alcohol  
 Propylalben

PVM/MA decadiene crosspolymer  
 PVP/Dimethiconylacrylate/polycarbamyl/polyglycol ester  
 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/dimethylaminoethylmethacrylate/polycarbamyl/polyglycol ester  
 PVP/eicosene copolymer  
 PVP/hexadecene copolymer  
 PVP/hydrolyzed wheat protein copolymer  
 Rice peptide  
 Sericin  
 Shea butter (Butyrospermum parkii)  
 Shellac  
 Sodium C12-15 pareth-7 sulfonate  
 Sodium hyaluronate  
 Soluble collagen  
 Soluble keratin  
 Soluble wheat protein  
 TEA-acrylates/acrylonitril copolymer  
 Tosylamide/epoxy resin  
 Triomanyl PVP  
 Triethonium hydrolyzed collagen ethosulfate  
 Wheat peptide

**Fixative**

Acrylates copolymer  
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer  
 AMP-acrylates copolymer  
 Hydrolyzed zein  
 Methacryloyl ethyl betaine/acrylates copolymer  
 Methyl rosinat  
 Polyquaternium-4, -10, -29  
 PPG-20 methyl glucose ether  
 Sodium polystyrene sulfonate

**Flavor (aroma)**

Benzaldehyde  
 Caraway (Carum carvi) oil  
 Cardamon (Elettaria cardamomum) oil  
 Cinnamon (Cinnamomum casia) oil  
 Clove (Eugenia caryophyllus) oil  
 Ethyl vanillin  
 Eucalyptus globulus oil  
 Flavor (aroma)  
 Glutamic acid  
 Glycyrrhetic acid  
 Glycyrrhizic acid  
 Glycyrrhizin, ammoniated  
 Methyl salicylate  
 Orange (Citrus aurantium dulcis) oil  
 Peppermint (Mentha piperita) oil  
 Rosemary (Rosmarinus officinalis) oil  
 Sodium glycyrrhizinate  
 Thymol  
 Vanillin

**Foam booster**

Alkyldimethylamine oxide  
 Babassuamidopropyl betaine  
 Babassuamidopropylamine oxide  
 Caprylyl pyrrolidone  
 Carrageenan (Chondrus crispus)  
 Cocamide DEA, C, MIPA  
 Cocamidopropyl betaine  
 Cocamidopropyl dimethylamine lactate  
 Cocamidopropyl hydroxysultaine  
 Coco-betaine  
 Coco/oleamidopropyl betaine  
 Cocoyl amido hydroxy sulfo betaine  
 Cocoyl monoethanolamide ethoxylate  
 DEA-hydrolyzed lecithin  
 Dimethyl lauramine  
 Disodium cocamido MEA-sulfosuccinate  
 Disodium cocoamphodiacetate  
 Disodium lauramido MEA-sulfosuccinate  
 Disodium laureth sulfosuccinate  
 Lauramide MIPA

Lauramidopropyl betaine  
 Lauryl betaine  
 Myristamidopropyl dimethylamine dimethicone copolyol phosphate  
 Myristamine oxide  
 Octyloleocetyl benzoate  
 Oleamide DEA, O, MIPA  
 Oleyl betaine  
 Palm kernelamide DEA  
 PEG-3 lauramine oxide  
 PPG-15 stearyl ether benzoate  
 PEG-7000  
 Sodium cocoamphoacetate  
 Sodium cocoyl isethionate  
 Sodium laureth sulfate  
 Sodium lauroyl wheat amino acids  
 Sodium octoxynol-2 ethane sulfonate  
 Soyamidopropyl betaine  
 Tallowamide MEA

**Foam stabilizer**

Babassuamidopropylamine oxide  
 Behenamine oxide  
 Caprylyl pyrrolidone  
 Cetamine oxide  
 Cocamide DEA, C, MEA, C, MIPA  
 Cocamidopropyl betaine  
 Cocamidopropyl hydroxysultaine  
 Cocamidopropyl lauryl ether  
 Cocamidopropylamine oxide  
 Cocamine oxide  
 Dihydroxyethyl C12-15 alkoxypropylamine oxide  
 Dihydroxyethyl cocamine oxide  
 Dihydroxyethyl tallowamine oxide  
 Erucamidopropyl hydroxysultaine  
 Hydroxypropyl methylcellulose  
 Isostearamide DEA  
 Lauramide DEA, L, MEA  
 Lauramidopropylamine oxide  
 Lauramine oxide  
 Laureth-10  
 Lauric-linoleic DEA  
 Lauroyl-linoleoyl diethanolamide  
 Lauroyl-myristoyl diethanolamide  
 Lauryl pyrrolidone  
 Linoleamide MEA  
 Myristamide DEA, M, MEA  
 Oleamide MEA  
 Palmitamide MEA  
 PEG-3 lauramide  
 PEG-4 oleamide  
 Ricinoleamide MEA  
 Sesamide DEA  
 Wheat germamide DEA

**Foamer**

Ammonium laureth sulfate  
 Ammonium laureth-5 sulfate  
 Ammonium laureth-12 sulfate  
 Ammonium lauryl sulfate, A, I, sulfosuccinate  
 Ammonium myreth sulfate  
 Ammonium nonoxynol 4 sulfate  
 Capryl caprylylglucoside  
 Cetyl betaine  
 Cocamide  
 Cocamidopropyl dimethylamine  
 Cocamidopropyl dimethylamine lactate  
 DEA-laureth sulfate  
 DEA lauryl sulfate  
 Decyl glucoside  
 Disodium caproamphodiacetate  
 Disodium caproamphodipropionate  
 Disodium capryloamphodiacetate  
 Disodium cocoamphodipropionate  
 Disodium lauroamphodiacetate  
 Disodium lauroamphodipropionate  
 Disodium lauryl sulfosuccinate  
 Disodium oleamide MEA-sulfosuccinate

## Functions

Disodium oleamido MIPA-sulfosuccinate  
 Disodium PEG-4 cocoamido MIPA-sulfosuccinate  
 Isostearamidopropylamine oxide  
 Lauryl glucoside  
 Methyl gluceth-20  
 MEA-laureth sulfate  
 Mixed isopropanolamines myristate  
 MIPA-lauryl sulfate  
 PEG-80 sorbitan laurate  
 PEG lauryl ether sulfate  
 Potassium cocoate, P. lauryl sulfate  
 Quillaja saponaria extract  
 Sodium caproamphoacetate  
 Sodium capryloamphoacetate  
 Sodium capryloamphohydroxypropylsulfonate  
 Sodium cocoamphoacetate  
 Sodium cocoamphopropionate  
 Sodium C12-15 pareth-25 sulfate  
 Sodium C12-15 pareth-3 sulfonate  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium C14-16 olefin sulfonate  
 Sodium deceth sulfate  
 Sodium laureth-2 sulfate  
 Sodium laureth-3 sulfate  
 Sodium laureth-7 sulfate  
 Sodium lauriminodipropionate  
 Sodium lauryl ether sulfosuccinate  
 Sodium lauryl sulfate, S. I. sulfoacetate  
 Sodium lauryl sulfosuccinate  
 Sodium magnesium laureth sulfate  
 Sodium myreth sulfate, S. myristyl sulfate  
 Sodium undeceth sulfate  
 Sodium undecyl sulfate  
 TEA-dodecylbenzenesulfonate  
 TEA-laureth sulfate  
 TEA-lauroyl collagen amino acids  
 TEA-lauroyl keratin amino acids  
 TEA-lauryl sulfate  
 TEA-palm kernel sarcosinate  
 Wheat germamidopropyl betaine  
 Yucca vera extract

**Fragrance**

Chamaecyparis obtusa oil  
 Orange (Citrus aurantium dulcis) oil  
 Peppermint (Mentha piperita) oil  
 Phenethyl alcohol

**Fragrance solvent**

Benzyl benzoate  
 Diethyl phthalate  
 Triacetin  
 Triethyl citrate

**Fungicide**

Astrocarum murumuru extract  
 Azadirachta indica extract  
 Capian  
 Dihodomethyltolylsulfone  
 Ficus racemosa extract  
 Hexetidine  
 Ligusticum jeholense extract  
 Mauritia flexosa extract  
 Metaleuca symphyocarp extract  
 Melia australasica extract  
 Melia azadirachta extract  
 Mushroom (Cordyceps sabolifera) extract  
 Mushroom (Coriolus versicolor) extract  
 Sodium undecylenate  
 Tea tree (Melaleuca alternifolia) oil  
 Thiabendazole  
 Undecylenamide MEA  
 Zinc undecylenate  
 Ziziphus jujuba extract

**Gellant**

Acrylic acid/acrylonitril copolymer  
 Agar  
 Algin

Cosmetic Bench Reference 1996

Aluminum distearate, A. tristearate  
 Ammonium acrylates/acrylonitril copolymer  
 Behenic acid  
 Calcium alginate  
 Carbomer  
 Carboxymethylchitosan  
 N,O-Carboxymethylchitosonium  
 Carrageenan (Chondrus crispus)  
 Ceresin  
 Cetearyl candelillate  
 Dibenzylidene sorbitol  
 Ethylene/acrylic acid copolymer  
 Ethylene/VA copolymer  
 Gellan gum  
 Hexanediol behenyl beeswax  
 Hydrogenated jojoba oil  
 Hydrogenated jojoba wax  
 Hydroxystearic acid  
 Jojoba wax  
 Laneth-5, -15  
 Montmorillonite  
 Myreth-3-octanoate  
 Octacosanyl stearate  
 Oleth-3 phosphate  
 Oleth-10 phosphate  
 Poloxamer 105, 123, 124, 185, 235  
 Poloxamer 237, 238, 338, 407  
 Polyethylene  
 Polyethylene, oxidized  
 Polyquaternium-31  
 Potassium alginate, P. chloride  
 Sodium nonoxynol-6 phosphate  
 Sodium tallowate  
 Synthetic beeswax  
 TEA-acrylates/acrylonitril copolymer  
 Tribehenin

**Glosser**

C18-36 acid glycol ester  
 Diphenyl dimethicone  
 Methyl gluceth-10  
 Octyldodecyl lactate  
 Phenyl methicone, P. trimethicone  
 Polyglyceryl-2 dioleate  
 Polyisobutene  
 Polyisobutene/isohexapentacontahexane  
 Polyisobutene/isooctahexacontane  
 Polymethacrylamidopropyltrimonium chloride  
 PPG-10 methyl glucose ether  
 PPG-36 oleate  
 Tea (Camellia sinensis) oil  
 Tribehenin

**Hair care**

Gentiana scabra extract  
 Maidenhair fern extract  
 Nicotinamide  
 Nicotinic acid  
 Paeonia lactiflora extract  
 Watercress (Nasturtium officinale) extract

**Hair conditioner**

Amino bispropyl dimethicone  
 Amodimethicone  
 AMPD-isostearyl hydrolyzed collagen  
 Aqua Ichthammol  
 Babassu (Orbignya oleifera) oil  
 Babassuamidopropyltrimonium chloride  
 Behenamidopropyl dimethylamine  
 Behenamidopropyl hydroxyethyl dimonium chloride  
 Behenitrimonium chloride  
 Biotin  
 Bishydroxyethyl biscetyl malonamide  
 Borageamidopropyl phosphatidyl PG-dimonium chloride  
 Brazil nut (Bertholletia excelsa) oil

Cetearyl trimonium methosulphate  
 Cetrimonium bromide, C. chloride  
 Cetyl pyridinium chloride  
 Chia (Salvia hispanica) oil  
 Chrysanthemum morifolium extract  
 Cichona succirubra extract  
 Cocamidopropyl dimethylamine propionate  
 Coccinea indica extract  
 Cocodimonium hydroxypropyl hydrolyzed collagen  
 Cocodimonium hydroxypropyl hydrolyzed keratin  
 Cocodimonium hydroxypropyl silk amino acids  
 Cocodimonium hydroxypropyl hydrolyzed wheat protein  
 Cocodimonium hydroxypropyloxethyl cellulose  
 Cocotrimonium chloride  
 Collagen amino acids  
 Cyclomethicone  
 L-cysteine HCL  
 Dibehenylidimonium methosulfate  
 Dicytyldimonium chloride  
 Dicoocodimonium chloride  
 Dihydroxyethyl tallowamine oleate  
 Dimethicone  
 Dimethicone copolyol acetate, D. c. almondate  
 Dimethicone copolyol amine  
 Dimethicone copolyol bishydroxyethylamine  
 Dimethicone copolyol isosteate, D. c. laurate  
 Dimethicone copolyol olivate  
 Dimethicone hydroxypropyl trimonium chloride  
 Dimethyl lauramine dimer dilinoleate  
 Dioleamidodethyl hydroxyethylmonium methosulfate  
 Dipalmityl ethyl hydroxyethylmonium methosulfate  
 Diphenyl dimethicone  
 Ditallowadimonium chloride  
 N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
 Eniada phaseoloides extract  
 Ethyl ester of hydrolyzed animal protein  
 Gelatin  
 Ginseng hydroxypropyltrimonium chloride, butylene glycol  
 Hematin  
 Honey (Mel)  
 Hydrolyzed collagen  
 Hydrolyzed hair keratin  
 Hydrolyzed vegetable protein  
 Hydrolyzed wheat protein/dimethicone copolyol acetyl copolymer  
 Hydrolyzed wheat protein hydroxypropyl polysiloxane  
 Hydroxyethyl cetyltrimonium phosphate  
 Hydroxypropyltrimonium hydrolyzed collagen  
 Hydroxypropyl trimonium hydrolyzed wheat protein polysiloxane copolymer  
 Hyssop (Hyssopus officinalis) extract  
 Inga edulis extract  
 Isostearamidopropylamine oxide  
 Isostearyl hydrolyzed collagen  
 Keratin amino acids  
 Kiwi (Actinidia chinensis) fruit extract  
 Kola (Cola acuminata) extract  
 Laminaria japonica extract  
 Lauritrimonium chloride  
 Lauryl hydroxypropyl trimonium polysiloxane copolymer  
 Lauryldimethylamine isosteate  
 Lauryldimonium hydroxypropyl hydrolyzed collagen  
 Lauryldimonium hydroxypropyl hydrolyzed wheat protein  
 Linoleamidopropyl dimethylamine dimer dilinoleate  
 Linoleamidopropyl dimethylamine  
 Lysimachia foenum-graecum extract  
 Melaleuca hypericifolia extract  
 Ocimum sanctum extract  
 Olealkonium chloride

## Functions

Oleyl dimethylamidopropyl ethonium ethosulfate  
 Palmitamidodecanediol  
 Panthenyl ethyl ether  
 Paulownia imperialis extract  
 Peach (*Prunus persica*) leaf extract  
 PEG-2 cocomonium chloride  
 PEG-120 jojoba acid/alcohol  
 PG-hydroxycellulose lauryldimonium chloride  
 PG-hydroxyethylcellulose cocodimonium chloride  
 PG-hydroxyethylcellulose laurvidimonium chloride  
 PG-hydroxyethylcellulose stearyldimonium chloride  
 Phenyl trimethicone  
 Phospholipids  
 Phytantriol  
 Polyoxyethylene polyoxypropylene glycol  
 Polypropylene glycol  
 Polyquaternium-4, -6, -7, -10  
 Polyquaternium-22, -28, -39  
 PPG-5-ceteth-10 phosphate  
 Propyltrimonium hydrolyzed collagen  
 Propyltrimonium hydrolyzed soy protein  
 Propyltrimonium hydrolyzed wheat protein  
 Quaternium-18, -75, -81, -82  
 Quaternium-79 hydrolyzed keratin  
 Quaternium-79 hydrolyzed silk  
 Sambucus nigra extract oil  
 Sesamidopropyl ammonium chloride  
 Silicone quaternium-1, -8  
 Sodium cocoamphoacetate  
 Sodium cocoyl hydrolyzed collagen  
 Sodium polystyrene sulfonate  
 N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
 Stearpynum chloride  
 Stearalkonium chloride  
 Stearamidopropyl dimethylamine  
 Steardimonium hydroxypropyl hydrolyzed wheat protein  
 Steartrimonium chloride  
 Steartrimonium hydroxyethyl hydrolyzed collagen  
 N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
 Stenocalyx micalii extract  
 Sulfur  
 Tallowbenzylidimethylammonium chloride, hydrogenated  
 Tallowtrimonium chloride  
 Tea (*Camellia sinensis*) oil  
 TEA-cocoyl hydrolyzed soy protein  
 Thenoyl methionate  
 Trimethylsilylamodimethicone  
 Wheat amino acids

**Hair set resin polymer**

Acrylates/acrylamide copolymer  
 Acrylates/PVP copolymer  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylacrylamide copolymer  
 AMP-acrylates copolymer  
 Butylester of PVM-MA copolymer  
 Carboxylated vinylacetate terpolymer  
 Diglycol/CHDM/isophthalates/SIP copolymer  
 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Hydroxypropyl chitosan  
 Isopropyl ester of PVM/MA copolymer  
 Octylacrylamide:acrylates/burylaminoethyl methacrylate copolymer  
 Polymethacrylamidopropyltrimonium chloride  
 Polypropylene glycol oligosuccinate  
 PVP  
 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/Polycarbonyl polyglycol ester  
 PVP/VA copolymer  
 PVP/VA-vinyl propionate copolymer  
 Sodium polyacrylate

VA/butyl maleate/isobornyl acrylate copolymer  
 VA/crotonates/vinyl neodecanoate copolymer  
 VA/crotonates/vinyl propionate copolymer  
 VA/crotonates copolymer  
 Vinyl caprolactam/PVP/  
 dimethylaminoethylmethacrylate copolymer

**Hair sheen**

Maidenhair fern extract  
 Tetrahydroxypropyl methicone

**Hair waving**

Ammonium thioglycolate, A. thiolactate  
 Argania spinosa oil  
 L-cysteine HCL  
 Cystine  
 Diammonium dithiodiglycolate  
 Dilauryl thiodipropionate  
 Ethanolamine sulfite, E. thioglycolate  
 Ethanolamine thiolactate  
 Glyceryl thioglycolate  
 Hydroxymethyl dioxazabicyclooctane  
 Jojoba esters  
 Monoethanolamine thiolactate  
 Shea butter, ethoxylated  
 Sodium thioglycolate  
 Thioglycerin  
 Thioglycolic acid  
 Thiolactic acid

**Humectant**

Acetamide MEA  
 Acetyl monoethanolamine  
 6-(N-Acetyl amino)-4-oxyhexyltrimonium chloride  
 Adenosine phosphate  
 Ammonium lactate  
 Atelocollagen  
 Calcium pantothenate  
 Calcium stearoyl lactylate  
 Carboxymethyl chitin  
 Carboxymethyl chitosan succinamide  
 Chitosan PCA  
 Cholesteryl hydroxystearate  
 Collagen amino-polysiloxane hydrolyzate  
 Colloidal oatmeal  
 Copper PCA methylsilanol  
 Dimethicone copolyol laurate  
 Dipotassium glycyrrhizinate  
 Ethyl ester of hydrolyzed silk  
 Fatty quaternary amine chloride complex  
 Glucose glutamate  
 Glycereth-4,5-lactate  
 Glycereth-7, -12, -26  
 Glycenn  
 Honey extract  
 Hydrogenated passion fruit oil  
 Hydrolyzed casein  
 Hydrolyzed fibronectin  
 Hydrolyzed glycosaminoglycans  
 Hydrolyzed oat protein  
 Hydrolyzed silk  
 Hydrolyzed soy protein  
 Hydroxypropyl chitosan  
 Hydroxypropyltrimonium hydrolyzed casein  
 Hydroxypropyltrimonium hydrolyzed silk  
 Hydroxypropyltrimonium hydrolyzed soy protein  
 Hydroxypropyltrimonium hydrolyzed wheat protein  
 Keratin amino acids  
 Lactamide DGA, MEA  
 Lactamidopropyl trimonium chloride  
 Lactic acid  
 Lactose  
 Lauryl lysine  
 Maltitol  
 Mannitol  
 Methyl gluceth-10, -20  
 Natto gum  
 Oat (*Avena sativa*) extract, protein  
 Panthenol

Panthenyl ethyl ether  
 PCA  
 PEG-4  
 Polyamino sugar condensate  
 Potassium lactate  
 Propylene glycol  
 Propyltrimonium hydrolyzed collagen  
 Propyltrimonium hydrolyzed soy protein  
 Propyltrimonium hydrolyzed wheat protein  
 Quaternium-22  
 Rice (*Oryza sativa*) germ oil  
 Sea Salts (Maris sal)  
 Shea butter (*Butyrospermum parkii*)  
 Silk powder  
 Sodium behenoyl lactylate  
 Sodium caproyl lactylate  
 Sodium cocoyl lactylate  
 Sodium hyaluronate  
 Sodium isostearoyl lactylate  
 Sodium lactate, S. lauroyl lactylate, S. PCA  
 Sodium polyglutamate  
 Sodium stearoyl lactylate  
 Sorbitan laurate  
 Sorbitan sesquisostearate  
 Sorbitol  
 Sphingolipids  
 TEA-PCA  
 Urea

**Hydrotrope**

Ammonium cumenesulfonate  
 Ammonium xylenesulfonate  
 Cetamine oxide  
 Cocamidopropylamine oxide  
 Lauramine oxide  
 Potassium toluenesulfonate  
 PPG-2-isodeceth-4, -6, -9, -12  
 Sodium cumene sulfonate  
 Sodium laureth-13-carboxylate  
 Sodium toluene sulfonate  
 Sodium xylene sulfonate  
 Trideceth-19-carboxylic acid

**Intermediate**

Caprylic acid  
 Deceth-3  
 Diethyl succinate  
 Dimethylaminopropylamine  
 DM hydantoin  
 Dodecylbenzene sulfonic acid  
 Ethylene dichloride  
 4-Fluoro 3-nitro aniline  
 Lauramine  
 Methyl benzoate, M. cocoate  
 Methyl isostearate, M. laurate  
 Methyl myristate, M. palmitate  
 Oleic acid  
 Ricinoleic acid  
 Tall oil acid  
 Tallow acid

**Lathering agent**

Ammonium cocoyl sarcosinate  
 Ammonium C12-15 alkyl sulfate  
 Ammonium lauroyl sarcosinate  
 Cocamide MEA ethoxylate  
 Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen  
 Lauryl sarcosine  
 Myristoyl sarcosine  
 Sodium cocoyl sarcosinate  
 Sodium lauroyl sarcosinate  
 Sodium methyl cocoyl taurate  
 Sodium myristoyl sarcosinate  
 TEA-cocoyl sarcosinate  
 TEA-lauryl sarcosinate

**Lubricant**

Aluminum salt octenyl succinate  
 Amodimethicone

## Functions

Boron nitrde  
 Calcium aluminum borosilicate  
 Calcium stearate  
 Caprylic/capric triglyceride  
 Coceth-7 carboxylic acid  
 Coconut (Cocos nucifera) oil  
 Cyclomethicone  
 Diisodecyl adipate  
 Diisostearyl fumarate  
 Dimethicone copolyol  
 Glyceryl isostearate, G. oleate  
 Glyceryl polymethacrylate  
 Gold of Pleasure oil  
 Hyaluronic acid  
 Hydrogenated coconut oil  
 Hydrogenated cottonseed oil  
 Hydrogenated palm oil  
 Hydrogenated soybean/cottonseed oil  
 Hydrogenated soybean oil  
 Hydrogenated vegetable oil  
 Hydrolyzed oat flour  
 Hydroxypropyl guar  
 Isodecyl stearate  
 Isopropyl lanolate  
 Isostearyl diglyceryl succinate  
 Jojoba esters  
 Lanolin oil  
 Laureth-3 phosphate  
 Magnesium myristate, M. stearate  
 Mango (Mangifera indica) oil  
 Mineral oil (Paraffinum liquidum)  
 Mink oil  
 Monoethyl citrate  
 Neatsfoot oil  
 Oleostearine  
 Partially hydrogenated soybean oil  
 PEG-2 stearate  
 PEG-4 dilaurate  
 PEG-5M  
 PEG-9M  
 PEG-23M  
 PEG-27 lanolin  
 PEG-30 lanolin  
 PEG-40 lanolin, P. stearate  
 PEG-45M  
 PEG-90M  
 PEG-160M  
 PEG/PPG-17/6 copolymer  
 Pentaerythrityl tetraethylargonate  
 Petrolatum  
 Phenethyl dimethicone  
 Phenyl methicone  
 Polyacrylamidomethypropene sulfonic acid  
 Polybutene  
 Polydimethicone copolyol  
 Polyglycerol ester of mixed vegetable fatty acids  
 Polymethylsilsesquioxane  
 Potassium laurate, P. myristate  
 Potassium tallowate  
 PPG-2 myristyl ether propionate  
 PPG-3 myristyl ether  
 PPG-9-buteth-12  
 PPG-11 stearyl ether  
 PPG-12-buteth-16  
 PPG-12-PEG-50 lanolin  
 PPG-14 butyl ether  
 PPG-20 ceryl ether  
 PPG-20-buteth-30  
 PPG-24-buteth-27  
 PPG-28-buteth-35  
 PPG-36 oleate  
 PPG-40 butyl ether  
 Quaternium-79 hydrolyzed keratin  
 Quaternium-79 hydrolyzed silk  
 Rice (Oryza sativa) starch  
 Shea butter (Butyrospermum parkii) extract  
 Shorea stenopiera butter  
 Silica  
 Stearamide MEA, S. MEA-stearate  
 Stearoxymethylsilane

Stearyl dimethicone  
 Triisostearyl citrate  
 Triolein  
 Trisodium HEDTA  
 Triundecanoin  
 Zinc laurate, Z. stearate

**Miscellaneous**

**Adhesion promoter**—Glycerin/diethylene glycol/adipate crosspolymer  
**Analgesic**—Glycol salicylate  
**Anesthetic**—Benzocaine  
**Anti-elastic**—Hydrolyzed Ulva lactuca extract  
**Anti-itching**—Sodium shale oil sulfonate  
**Antiacid**—Magnesium hydroxide, Magnesium silicate, Simethicone  
**Antifoam**—Dimethicone silylate, Simethicone  
**Anilipasic**—Laminaria saccharina extract  
**Antipruritic**—Coal tar  
**Antispasmodic**—Garlic (Allium sativum) extract  
**Antiwrinkle**—Chinese hibiscus (Hibiscus rosa-sinensis) extract  
**Barrier**—Glycerin/diethylene glycol/adipate crosspolymer  
**Cell regeneration**—Glycoproteins, Hydrolyzed Ulva lactuca extract  
**Co-emulsifier**—Cholesteryl/behenyl/octyldodecyl lauroyl glutamate, Isododecane  
**Colloid**—Gelatin  
**Cooling agent**—Menthyl PCA, Menthone glycerin acetate  
**Detoxifier**—Clover (Trifolium pratense) extract  
**Dye stabilizer**—Uric acid  
**Filler**—Mica  
**Fragrance stabilizer**—2,2',4,4'-Tetrahydroxybenzophenone  
**Free radical scavenger**—Melanin  
**IR filter**—Corallina officinalis

**Lanolin substitute**—PEG-80 jojoba acid/alcohol  
**Lipolytic**—Gelidium carilaginacum  
**Oxidant**—Barium peroxide, Hydrogen peroxide, Urea peroxide  
**Oxygen carrier**—Perfluorodecalin  
**Peroxide stabilizer**—Phenacetin, Sodium stannate  
**Scalp stimulant**—Birch (Betula alba) leaf extract  
**Sebostatic**—Laminaria saccharina extract  
**Shine enhancer**—Hydrolyzed wheat protein hydroxypropyl polysiloxane  
**Skin barrier lipid**—Ceramide 3, N(27-Scearoyloxy-heptacosanoyl) phytosphingosine  
**Skin clarifier**—Oat (Avena sativa) bran extract  
**Skin purifier**—Birch (Betula alba) leaf extract  
**Substantivity**—Dimethicone copolyol bishydroxyethylamine, Dimethicone hydroxypropyl trimonium chloride, Trimethylsilylamodimethicone  
**Sunless tanning**—Acetyl tyrosine, Eclipta alba extract in white emulsion  
**Tonic**—Kiwi (Actinidia chinensis) fruit extract, Matricaria (Chamomilla recutita) extract, Orange (Citrus aurantium dulcis) peel extract  
**Viscosity stabilizer**—Diisodecyl adipate  
**Spreading agent**—Stearyl heptanoate  
**Wound healing**—Comfrey (Symphytum officinale) leaf extract  
**Waterproofing agent**—PVP/icosene copolymer, PVP/hexadecene copolymer, Tricontanyl PVP

**Moisture barrier**

Acrylates/octylarylamide copolymer  
 Betaglucon  
 C16-18 alkyl methicone  
 Cholesterol  
 Glycolipids  
 Isoicosane

# BERNEL

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 CHEMICAL COMPANY

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## Functions

Isohexadecane	Embolica officinalis extract	Methylsilanol elasnate, M. mannuronate
Lanosterol	Ethyl minkate	Milk amino acids
Ocetyl pelargonate, O. stearate	Eugenia jambolana extract	Mineral oil (Paraffinum liquidum)
Polyisobutene	Evening primrose (Oenothera biennis) extract, oil	Molybdenum aspartate
Polyisobutene/isohexapentacontahexane	Galla sinensis extract	Mouriri apiranga extract
Polyisobutene/isooctanexacontane	Ganoderma lucidum oil	Natto gum
Silica silviate	Ginseng (Panax ginseng) extract	Neiumbium speciosum extract
Trihydroxypalmitamidohydroxy propyl myristyl ether	Gleditsia sinensis extract	Neopentyl glycol dicaprate
Trimethylsiloxysilicate	Glycereth-12	Oat (Avena sativa) protein
	Glycerol aiginate, G. collagenate	Ocetyl hydroxystearate
	Glycerol polymethacrylate	Ophiopogon japonicus extract
	Glycolic acid	Orange (Citrus aurantium dulcis) peel wax
	Glycolipids	Palmetto extract
	Glycosaminoglycans	Pantethine
	Glycosphingolipids	Panthenyl ethyl ether
	Gnerum amazonicum extract	Paraffin
	Grape (Vitis vinifera) seed oil	Partially hydrogenated soybean oil
	Hazel (Corylus avellana) nut oil	Peanut (Arachis hypogaea) oil
	Honey extract	Pecan (Carya illinoensis) oil
	Hyaluronic acid	PEG-4, -6, -8, -12
	Hybrid safflower (Carthamus tinctorius) oil	PEG-70 mango glycerides
	Hydrogenated castor oil	PEG-75 shea butter glycerides
	Hydrogenated coconut oil	PEG-75 shorea butter glycerides
	Hydrogenated cottonseed oil	PEG-100 stearate
	Hydrogenated lecithin	Pentaerythrityl isostearate/caprate/caprylate/adipate
	Hydrogenated palm oil	Pentaerythrityl stearate/caprate/caprylate/adipate
	Hydrogenated polyisobutene	Pentylene glycol
	Hydrogenated soybean oil	Perfluoropolymethylisopropyl ether
	Hydrogenated soybean/cottonseed oil	Petrolatum
	Hydrogenated vegetable oil	Petroleum wax
	Hydrolyzed carbolipoprotein	Pfaffia spp. extract
	Hydrolyzed collagen	Pistachio (Pistacia vera) nut oil
	Hydrolyzed elastin	Placental protein
	Hydrolyzed fibronectin	Plankton extract
	Hydrolyzed glycosaminoglycans	Polyamino sugar condensate
	Hydrolyzed keratin	Polybutene
	Hydrolyzed milk protein	Polyunsaturated fatty acids
	Hydrolyzed oats	Potassium DNA, P. lactate, P. PCA
	Hydrolyzed pea protein	PPG-8/SMDI copolymer
	Hydrolyzed placental protein	PPG-20 methyl glucose ether distearate
	Hydrolyzed rice protein	Propylene glycol dicaprylate/dicaprate
	Hydrolyzed transgenic collagen	Propylene glycol dioctanoate
	Hydrolyzed serum protein	Pumpkin (Cucurbita pepo) seed oil
	Hydrolyzed silk	Quinoa (Chenopodium quinoa) extract
	Hydrolyzed sweet almond protein	Rapeseed (Brassica campestris) oil
	Hydrolyzed wheat protein	Rehmannia chinensis extract
	Hydroxyethyl chitosan	Rice (Oryza sativa) bran oil
	Inositol	Rose Water
	Isodecyl salicylate	Royal jelly extract
	Isostearyl hydrolyzed animal protein	Saccharide isomerate
	Jojoba (Buxus chinensis) oil	Saccharomyces lysate extract
	Jojoba esters	Saccharomyces/soy protein ferment
	Keratin amino acids	Safflower (Carthamus tinctorius) oil
	Kiwi (Actinidia chinensis) fruit extract	Selenium aspartate, S. protein complex
	Kola (Cola acuminata) extract	Sericin
	Kukui (Aleurites moluccana) nut oil	Serum albumin
	Lactamide DGA, L. MEA	Sesame (Sesamum indicum) oil
	Lactic acid	Shea butter (Butyrospermum parkii)
	Lactobacillus/whey ferment	Shea butter (Butyrospermum parkii) extract
	Lactococcus hydrolysate	Shorea stenoptera butter
	Lactoyl methylsilanol elastinate	Silk amino acids
	Lanolin alcohol	Sodium carboxymethyl beta-glucan
	Lauryl PCA	Sodium chondroitin sulfate
	Lecithin	Sodium DNA, S. hyaluronate
	Lesquerella fendleri oil	Sodium lactate, S. PCA
	Liposomes	Soluble collagen
	Lysine PCA	Soluble transgenic elastin
	Macadamia ternifolia nut oil	Soybean (Glycine soja) oil
	Magnesium aspartate	Spherical cellulose acetate
	Maltitol	Spondias amara extract
	Manganese aspartate	Squalene
	Mango (Mangifera indica) oil	Stomach extract
	Mannan	Sunflower (Helianthus annuus) seed oil
	Marine polyaminosaccharide	Superoxide dismutase
	Mauritella armata extract	Tissue extract
	Maximilliana regia extract	Tocopheryl acetate, T. linoleate
	Meadowfoam (Limnanthes alba) seed oil	Tomato (Solanum lycopersicum) extract
	Melaieuca hypericifolia extract	



## Functions

Tormentil (*Potentilla erecta*) extract  
 Trehalose  
 Triundecanoin  
 Vegetable oil  
 Walnut (*Juglans regia*) oil  
 Watercress (*Nasturtium officinale*) extract  
 Wheat (*Triticum vulgare*) germ extract, germ oil  
 Yarrow (*Achillea millefolium*) extract  
 Wheat amino acids  
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)  
 Yogurt filtrate  
 Zinc aspartate  
 Ziziphus jujuba extract

**Naturilizer**

2-Aminobutanol  
 Aminoethyl propanediol  
 Aminomethyl propanediol  
 Aminomethyl propanol  
 Ammonium carbonate  
 Calcium hydroxide  
 Diethanolamine  
 Ethanolamine  
 Glucamine  
 Isopropanolamine  
 Isopropylamine  
 2-Methyl-4-hydroxypyrrolidine  
 Morpholine  
 Sodium bromate  
 Succinic acid  
 Tetrahydroxypropyl ethylenediamine  
 Triethanolamine  
 Tromethamine

**Oil absorbent**

Hydrated silica  
 Polymethyl methacrylate  
 Silicon dioxide hydrate  
 Walnut (*Juglans regia*) shell powder

**Ointment base**

Borage (*Borago officinalis*) seed oil  
 Caprylic/capric/stearic triglyceride  
 Glyceryl cocoate  
 Hydrogenated coco-glycerides  
 Lanolin  
 Mink oil  
 Oleostearine  
 Tallow

**Opacifier**

Barium sulfate  
 C12-16 alcohols  
 Cetearyl octanoate  
 Cetyl myristate, C. palmitate  
 Cocamidopropyl lauryl ether  
 Glyceryl distearate  
 Glyceryl hydroxystearate  
 Glyceryl myristate, G. stearate  
 Glycol distearate, G. stearate  
 Magnesium myristate  
 PEG-2 distearate, P. stearate  
 PEG-2 stearate SE  
 PEG-3 distearate  
 Propylene glycol myristate, P. g. stearate  
 Stearamide  
 Stearamide DIBA-stearate  
 Stearamide MEA  
 Stearamide MEA-stearate  
 Stearamidopropyl dimethylamine lactate

Stearyl stearate  
 Styrene homopolymer  
 Styrene/acrylates copolymer  
 Styrene/PVP copolymer  
 Trisoxaneann PEG-6 esters

**Plasticizer**

Acetyl tributyl citrate  
 Acetyl triethyl citrate  
 AMP-isostearyl hydrolyzed wheat protein  
 AMPD-isostearyl hydrolyzed collagen  
 Cyclohexane dimethanol dibenzoate  
 Dibutyl phthalate  
 Diethyl phthalate  
 Diethylene glycol dibenzoate  
 Diisopropyl sebacate  
 Dimethicone copolyol  
 Dimethyl phthalate  
 Dipropylene glycol dibenzoate  
 Ethyl ester of hydrolyzed keratin  
 Glycerol tnbenzoate  
 Glycol  
 Hydrolyzed serum protein  
 Isocetyl salicylate  
 Isodecyl benzoate  
 Isoeicosane  
 Isopropyl lanolate  
 Isostearyl hydrolyzed collagen  
 Lauroyl hydrolyzed collagen  
 Marine collagen  
 Monostearyl citrate  
 Neopentyl glycol dibenzoate  
 Octyl benzoate, O. laurate  
 PEG-60 shea butter glycerides  
 Pentaerythrityl tetrabenzoate  
 Polyoxyethylene glycol dibenzoate  
 Polypropylene glycol dibenzoate  
 PPG-12-PEG-50 lanolin  
 PPG-20 cetyl ether  
 PPG-20 lanolin alcohol ether  
 Propylene glycol dibenzoate  
 Propylene glycol myristyl ether acetate  
 Rice (*Oryza sativa*) bran wax  
 Serum protein  
 Tosylamide/epoxy resin  
 Triacetin  
 Tributyl citrate  
 Triethyl citrate  
 Trimethyl pentanediol dibenzoate  
 Trimethylethanedibenzobenzoate

**Polish**


Acrylates copolymer  
 Aluminum silicate  
 Neatsfoot oil  
 Tallow

**Polymer**

Acrylamide sodium acrylate copolymer  
 Acrylates-VA crosspolymer  
 Acrylates/acrylamide copolymer  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylacrylamide copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Adipic acid-epoxypropyl diethylenetriamine copolymer  
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer  
 Ammonium acrylates copolymer

Ammonium acrylates/acrylonitril copolymer  
 AMP-acrylates copolymer  
 AMP-isostearyl hydrolyzed collagen  
 Butylster of PVM-MA copolymer  
 Calcium carrageenan  
 Carboxylated vinylacetate terpolymer  
 Ceteareth-2 phosphate  
 Ceteareth-5 phosphate  
 Ceteareth-10 phosphate  
 Ceteareth-29, -34  
 Coco-glucoside  
 Cocodimonium hydroxypropyloxyethyl cellulose  
 C12-13 pareth-4, -9, -23  
 DEA-ceteareth-2-phosphate  
 DEA-oleth-5-phosphate  
 DEA-oleth-20-phosphate  
 Diglycol/CHDM/isophtalates/SIP copolymer  
 Diisopropyl dimer dilinoate  
 Diisostearyl trimethylolpropane siloxy silicate  
 Diisostearyl dimer dilinoate  
 Dilinoleic acid  
 Dodecanedioic acid/cetearyl alcohol/glycol copolymer  
 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Ethylene/acrylic acid copolymer  
 Ethylene/VA copolymer  
 Glycereth-26 phosphate  
 Hyaluronic acid  
 Hydrolyzed RNA  
 Hydrolyzed wheat protein polysiloxane polymer  
 Hydroxypropyltrimonium hydrolyzed collagen  
 Hydroxypropyltrimonium hydrolyzed wheat protein  
 Laneth-40  
 Lauryldimonium hydroxypropyl hydrolyzed soy protein  
 Methacryloyl ethyl betaine/acrylates copolymer  
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer  
 Oleth-2 phosphate  
 Oleth-5 phosphate  
 PEG-3 lanolate  
 PEG-4 stearate  
 PEG-5M  
 PEG-7 glyceryl cocoate  
 PEG-8 glyceryl laurate  
 PEG-8/SMDI copolymer  
 PEG-9 castor oil  
 PEG-9M  
 PEG-11 babassu glycerides  
 PEG-12 palm kernel glycerides  
 PEG-12 stearate  
 PEG-14 avocado glycerides  
 PEG-15 glyceryl laurate  
 PEG-20 com glycerides  
 PEG-20 evening primrose glycerides  
 PEG-20 glyceryl oleate  
 PEG-23 oleate  
 PEG-23M  
 PEG-29 castor oil  
 PEG-42 babassu glycerides  
 PEG-45 safflower glycerides  
 PEG-45M  
 PEG-60 evening primrose glycerides  
 PEG-60 hydrogenated castor oil  
 PEG-75 castor oil  
 PEG-90M  
 PEG-120 distearate

**3 BETTER IDEAS.**

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## Functions

PEG-150 lanolin  
 PEG-160M  
 PG-hydroxycellulose lauryldimonium chloride  
 PG-hydroxyethylcellulose cocodimonium chloride  
 PG-hydroxyethylcellulose stearyldimonium chloride  
 Polyethylene, ionomer  
 Polyethylene, micronized  
 Polyethylene, oxidized  
 Polyglyceryl-2 polyhydroxystearate  
 Polymethacrylamidopropyltrimonium chloride  
 Polyquaternium-6, -7, -10, -11, -22, -39  
 Polysilicone-8  
 Potassium alginate  
 Potassium lauroyl collagen amino acids  
 Potassium lauroyl hydrolyzed soy protein  
 Potassium lauroyl wheat amino acids  
 PPG-8/SMDI copolymer  
 PPG-12/SMDI copolymer  
 PPG-51/SMDI copolymer  
 PVM/MA decadiene crosspolymer  
 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/VA copolymer  
 Sodium cocoyl hydrolyzed wheat protein  
 Steartrimonium hydroxypropyl hydrolyzed wheat protein  
 Steareth-2 phosphate  
 TEA-acrylates/acrylonitrogens copolymer  
 Tosylamide/epoxy resin  
 Tosylamide/formaldehyde resin  
 Trideceth-5, -6, -7, -8  
 VA/butyl maleate/isobornyl acrylate copolymer  
 VA/crotonates/vinyl neodecanoate copolymer  
 Vinyl caprolactam/PVP/dimethylaminoethylmethacrylate copolymer  
 Wheat (Triticum vulgare) protein  
 Xanthan gum

**Powder**

Acrylates copolymer, spherical powder  
 Attapulgite  
 Boron nitride  
 Calcium aluminum borosilicate  
 Calcium carbonate  
 Cellulose triacetate  
 Corn (Zea mays) cob powder, starch  
 Hydrogenated jojoba wax  
 Magnesium carbonate, M. myristate  
 Magnesium stearate  
 Mica  
 Microcrystalline cellulose  
 Nylon-6  
 Nylon powder  
 Oat (Avena sativa) starch  
 Polyamide 12  
 Polyethylene  
 Polymethyl methacrylate  
 Polymethylsilsesquioxane  
 PTFE  
 Silica  
 Silk powder  
 Spherical cellulose acetate  
 Talc  
 Tapioca dextrin  
 Zinc laurate

**Powder, absorbent**

Aluminum starch octenylsuccinate  
 Clays (white, yellow, red, green, pink)  
 Sorbitol  
 Tapioca

**Preservative**

Alcohol  
 Ascorbic acid  
 Ascorbyl palmitate

Benzalkonium chloride  
 Benzetonium chloride  
 Benzoic acid  
 Benzyl alcohol  
 Benzylparaben  
 5-Bromo-5-nitro-1,3-dioxane  
 2-Bromo-2-nitropropane-1,3-diol  
 Butylparaben  
 Calcium propionate  
 Cetrimonium bromide  
 Cetyl pyridinium chloride  
 Chloroxyleneol  
 Chlorphenesin  
 o-Cymen-3-ol  
 Diazolidinyl urea  
 Dichlorobenzyl alcohol  
 Dichlorophene  
 Diiodomethyltolylsulfone  
 Dimethyl hydroxymethyl pyrazole  
 Dimethyl oxazolidine  
 Disodium EDTA  
 DMDM hydantoin  
 EDTA  
 Erythorbic acid  
 7-Ethylbicyclooxazolidine  
 Ethylparaben  
 Fomistopsis officinalis oil  
 Formaldehyde  
 Glutaral  
 Glyceryl laurate  
 HEDTA  
 Hexamidine diisethionate  
 Hexedine  
 Imidazolidinyl urea  
 Isobutylparaben  
 Isopropyl sorbate  
 Isopropylparaben  
 MDM hydantoin  
 Methanamonium<sup>+</sup> chloride  
 Methyl paraben sodium  
 Methylchloroisothiazolinone  
 Methylidibromo glutaronitrile  
 Methylisothiazolinone  
 Methylparaben  
 Mushroom (Cordyceps sabolifera) extract  
 Myrrimonium bromide  
 Pentasodium pentetate  
 Penicetic acid  
 Phenethyl alcohol  
 Phenol  
 Phenyl mercuric acetate  
 o-Phenylphenol  
 Polyaminopropyl biguanide  
 Polymetaxox bicyclic oxazolidine  
 Potassium sorbate  
 Propylparaben  
 Quaternium-15  
 Salicylic acid  
 Sodium benzoate, S. bisulfate  
 Sodium butylparaben, S. dehydroacetate  
 Sodium erythorbate, S. ethyl paraben  
 Sodium hydroxymethylglycinate  
 Sodium metabisulfite, S. methylparaben  
 Sodium o-phenylphenate  
 Sodium propionate, S. propylparaben  
 Sodium pyrrithione, S. salicylate  
 Sodium sulfite  
 Sorbic acid  
 Tetrasodium EDTA  
 Thimerosal  
 Thymol  
 Tris (hydroxymethyl) nitromethane  
 Trisodium EDTA, T. HEDTA  
 Usnic acid  
 Zinc PCA

**Propellant**

Butane  
 Dimethyl ether  
 Hydrofluorocarbon 152a

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## Functions

Isobutane  
Propane

**Protein**

Albumen  
Atelocollagen  
Bleria hyacinthina extract  
Chrysanthemum morifolium extract  
Cocodimonium hydroxypropyl hydrolyzed collagen  
Cocodimonium hydroxypropyl hydrolyzed keratin  
Cocodimonium hydroxypropyl hydrolyzed soy protein  
Cocodimonium hydroxypropyl hydrolyzed wheat protein  
Cocoyl hydrolyzed collagen  
Collagen, C. phthalate  
Collagen amino-polysiloxane hydrolyzate  
Deoxyribonucleic acid  
Desamido collagen  
Elastin amino acids  
Embryo extract  
Ethyl ester of hydrolyzed animal protein  
Fibrinectin  
Gelatin  
Human placental protein  
Hydrolyzed collagen  
Hydrolyzed extensin  
Hydrolyzed fish protein  
Hydrolyzed hemoglobin  
Hydrolyzed keratin  
Hydrolyzed lactalbumin  
Hydrolyzed milk protein  
Hydrolyzed soy flour  
Hydrolyzed sweet almond protein  
Hydroxypropyltrimonium hydrolyzed collagen  
Isostearyl hydrolyzed collagen  
Keratin  
Lactoferrin  
Lactoglobulin  
Lauryldimonium hydroxypropyl hydrolyzed collagen  
Marine collagen  
Methylsilanol elastinate  
Potassium abietoyl hydrolyzed collagen  
Potassium cocoyl hydrolyzed collagen  
Potassium myristoyl hydrolyzed collagen  
Potassium oleoyl hydrolyzed collagen  
Potassium undecylenoyl hydrolyzed collagen  
Propyltrimonium hydrolyzed collagen  
Propyltrimonium hydrolyzed soy protein  
Propyltrimonium hydrolyzed wheat protein  
Protein hydrolysates  
Quaternium-79 hydrolyzed keratin  
Quaternium-79 hydrolyzed silk  
Rice peptide  
RNA  
Serum albumin, S. protein  
Silk powder

Sodium caseinate  
Sodium cocoyl hydrolyzed collagen  
Sodium cocoyl hydrolyzed soy protein  
Sodium myristoyl hydrolyzed collagen  
Sodium oleoyl hydrolyzed collagen  
Sodium stearoyl hydrolyzed collagen  
Sodium undecylenoyl hydrolyzed collagen  
Sodium/TEA-lauroyl hydrolyzed collagen  
Sodium/TEA-lauroyl hydrolyzed keratin  
Soluble collagen  
Soluble keratin  
Soluble wheat protein  
Soy (Glycine soja) protein  
Steardimonium hydroxypropyl hydrolyzed collagen  
Steardimonium hydroxyethyl hydrolyzed collagen  
TEA-cocoyl hydrolyzed collagen  
TEA-cocoyl hydrolyzed soy protein  
TEA-lauroyl collagen amino acids  
TEA-lauroyl keratin amino acids  
Trachea hydrolysate  
Triethonium hydrolyzed collagen ethosulfate  
Wheat (Triticum vulgare) germ extract, protein  
Wheat amino acids  
Wheat peptide  
Wheat protein

**Protein, hydrolyzed**

Ethyl ester of hydrolyzed silk  
Hydrolyzed casein  
Hydrolyzed elastin  
Hydrolyzed mushroom (Tricholoma matsutake) extract  
Hydrolyzed pea protein  
Hydrolyzed rice protein  
Hydrolyzed serum protein  
Hydrolyzed silk  
Hydrolyzed soy protein  
Hydrolyzed vegetable protein  
Hydrolyzed wheat protein  
Hydroxypropyltrimonium hydrolyzed casein  
Hydroxypropyltrimonium hydrolyzed silk  
Hydroxypropyltrimonium hydrolyzed soy protein  
Hydroxypropyltrimonium hydrolyzed wheat protein

**Reducing agent**

Dimyristyl thiodipropionate  
Hydrolyzed zein, iodized  
Hydrolyzed zein, sulfonized  
Zinc formaldehyde sulfoxylate

**Refatting agent**

Caprylic/capric triglyceride PEG-4 esters  
Cocamide MIPA  
Diisostearyl dimer diilinoate  
Hydrogenated palm kernel glycerides  
Isostearyl erucate, I. isostearate  
Lecithin

Liposomes  
Magnesium sulfate hepta-hydrate  
Octyldodecyl behenate, O. myristate  
bis-Octyldodecyl stearoyl dimer diilinoate  
Octyldodecyl stearoyl stearate  
Octyl hydroxystearate  
PEG-3 stearate  
PEG-4 oleamide  
PEG-6 capric/caprylic glycerides  
PEG-7 glyceryl cocoate  
PEG-16  
Propylene glycol dipalargonate

**Resin**

Acrylates/hydroxyesters acrylates copolymer  
Ethylene vinyl acetate  
Glyceryl abietate  
Methacryloyl ethyl betaine/acrylates copolymer  
4-Methyl benzenesulfonamide  
Polypropylene  
Polyquaternium-16, -17  
Sucrose benzoate

**Sequestant**

Calcium acetate, C. phosphate, C. sulfate  
Encapsulation and entrapment systems  
Pentasodium triphosphate  
Phosphoric acid  
Potassium phosphate, P. sodium tartrate  
Silicon dioxide hydrate  
Sodium citrate, S. gluconate  
Sorbitol  
Tartaric acid  
Tripotassium EDTA  
Trisodium NTA

**Silicone**

Amino bispropyl dimethicone  
Ammonium dimethicone copolyol sulfate  
Amodimethicone  
Behenoxy dimethicone  
C16-18 alkyl methicone  
Cetyl dimethicone copolyol  
Cyclomethicone Diisostearyl trimethylolpropane siloxy silicate  
Diisodecyl adipate  
Diisostearyl trimethylolpropane siloxy silicate  
Dimethicone  
Dimethicone copolyol  
Dimethicone copolyol almondate  
Dimethicone copolyol isostearate  
Dimethicone copolyol olivate, D. c. phthalate  
Dimethicone copolyolamina  
Dimethiconol fluorobutanol diilinoic acid  
Dimethiconol hydroxystearate, D. stearate  
Diphenyl dimethicone  
Disodium-PG-propyldimethicone thiosulfate  
Isopropyl hydroxybutyramide dimethicone copolyol  
Methicone

**Smoother, Shinier Hair?**  
Try our cross-linking conditioner: **CRODASONE W**

**Croda**  
7 Century Dr Parsippany NJ 07054 201-644-4900

**BROOKS INDUSTRIES inc.**

*Cosmetic Ingredients & Ideas®*

70 Tyler Place, South Plainfield, NJ 07080 USA

Tel 908-561-5200 Fax 908-561-9174

**Proteins**

**Hydrocoll, Solu-Soy, Wheat-Pro**

## Functions

Octamethyl cyclotetrasiloxane  
Phenyl methicone, P. trimethicone  
Polyether Trisiloxane  
Polymethylsilsesquioxane  
Polysilicone-8  
Quaternium-80  
Silicone quaternium-1, -8  
Sodium-PG-propyl thiosulfate dimethicone  
Stearoxymethicone/dimethicone copolymer  
Trimethylsilylamodimethicone

### Skin calming agent

Cornflower (*Centaurea cyanus*) extract  
Fennel (*Foeniculum vulgare*) extract  
Fenugreek extract  
Linden (*Tilia cordata*) extract  
Valerian (*Valeriana officinalis*) extract

### Skin cleanser

Dog rose (*Rosa canina*) hips extract  
Papaya (*Carica papaya*) extract  
Peach (*Prunus persica*) extract  
Rose (*Rosa multiflora*) extract  
Willow (*Salix alba*) extract

### Skin conditioner

Artemisia apiacea extract  
Astrocaryum tucuma extract  
Bactris gasipaes extract  
Biotin  
Bishydroxyethyl bisceryl malonamide  
Bletia hyacinthina extract  
Borage (*Borago officinalis*) seed oil  
Borageamidoopropyl phosphatidyl PG-dimonium chloride  
Carbocysteine  
Catalpa kaempfera extract  
Coco phosphatidyl PG-dimonium chloride  
Cocodimonium hydroxypropyl hydrolyzed keratin  
Collagen amino acids  
Cyclomethicone  
Dimethicone, D. copolvol acetate  
Emblca officinalis extract  
Equisetum arvense extract  
Ethyl ester of hydrolyzed animal protein  
Evening primrose (*Oenothera biennis*) oil  
Fomes fometanus extract  
Fomistopsis officinalis oil  
Gelatin  
Ginseng hydroxypropyltrimonium chloride  
butylene glycol  
Glycolipids  
Glycosphingolipids  
Gnetum amazonicum extract  
Honey (Mel)  
Hydrolyzed carbolipoprotein  
Hydrolyzed elastin  
Hydrolyzed pea protein  
Hydrolyzed rice protein  
Hydrolyzed serum protein  
Hydrolyzed silk  
Hydrolyzed soy protein  
Hydrolyzed vegetable protein  
Hydrolyzed wheat protein  
Inga edulis extract  
Kiwi (*Actinidia chinensis*) fruit extract  
Laminaria japonica extract  
Lecithin  
Marsilea minuta extract  
Nettle (*Urtica dioica*) extract  
Palmitamidodecanediol  
Pearls (*Margarita margarita*)  
PEG-42 Ebriko ceramides extract  
Phenyl trimethicone  
Phytantriol  
Polygonum multiflorum extract  
Polyquaternium-7, -22, -30  
Polyurethane-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -60, -61, -62, -63, -64, -65, -66, -67, -68, -69, -70, -71, -72, -73, -74, -75, -76, -77, -78, -79, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -120, -121, -122, -123, -124, -125, -126, -127, -128, -129, -130, -131, -132, -133, -134, -135, -136, -137, -138, -139, -140, -141, -142, -143, -144, -145, -146, -147, -148, -149, -150, -151, -152, -153, -154, -155, -156, -157, -158, -159, -160, -161, -162, -163, -164, -165, -166, -167, -168, -169, -170, -171, -172, -173, -174, -175, -176, -177, -178, -179, -180, -181, -182, -183, -184, -185, -186, -187, -188, 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## Functions

**Solubilizer**

Acetyl monoethanolamine  
Almond oil PEG-6 esters  
2-Aminobutanol  
Aminoethyl propanediol  
Aminomethyl propanediol, A. propanol  
Apricot kernel oil PEG-6 esters  
Benzalkonium chloride  
Butoxydiglycol  
Butyl glucoside  
Butylene glycol  
Butyloctanol  
Capric-caprylic mono-diglyceride  
Capryl caprylylglucoside  
Caprylic/capric triglyceride  
Caprylic/capric/linoleic triglyceride  
Caprylic/capric/oleic triglycerides  
Caprylyl/capryl glucoside  
Ceteareth-20  
Ceteth-10  
Cetyl PPG-2 isodeceth-7 carboxylate  
Cholesterol  
Cum oil PEG-6 esters  
Decaglycerol monodiolate  
Diethanolamine  
Dilaureth-10 phosphate  
Dimethyl octylnediol  
Dioleth-8 phosphate  
Glycereth-7 -26  
Glyceryl caprylate, G. dilaurate  
Glyceryl caprylate/caprate  
Isoeicosane  
isopropanolamine  
Isosteareth-20  
Laneth-5, -15  
Laureth-23  
Methylated cyclodextrin  
Myreth-3  
Myreth-3-octanoate  
Nonoxynol-10, -12, -14, -40, -50  
Octoxynol-11, -40  
Oleoamphohydroxypropylsulfonate  
Oleth-3, -5, -10, -15, -20, -25, -50  
Oleth-20 phosphate  
PEG-4, -6, -8, -12, -16, -20, -32, -40  
PEG-4 dilaurate  
PEG-6 capric/caprylic glycerides  
PEG-6 methyl ether  
PEG-8 distearate  
PEG-12 laurate

PEG-15 castor oil  
PEG-18 stearate  
PEG-20 glyceryl isostearate, P. g. laurate  
PEG-20 glyceryl oleate, P. g. stearate  
PEG-20 methyl glucose sesquisteate  
PEG-20 sorbitan isostearate  
PEG-20 sorbitan triisostearate  
PEG-24 hydrogenated lanolin  
PEG-25 castor oil  
PEG-25 hydrogenated castor oil  
PEG-30 castor oil  
PEG-30 glyceryl cocoate  
PEG-30 glyceryl isostearate  
PEG-30 glyceryl laurate  
PEG-30 glyceryl oleate  
PEG-30 glyceryl stearate  
PEG-33 castor oil  
PEG-35 castor oil  
PEG-36 castor oil  
PEG-40 castor oil  
PEG-40 glyceryl laurate, P. g. stearate  
PEG-40 hydrogenated castor oil  
PEG-40 hydrogenated castor oil PCA isostearate  
PEG-40 sorbitan diisostearate  
PEG-45 palm kernel glycerides  
PEG-48 hydrogenated castor oil  
PEG-50 castor oil  
PEG-50 hydrogenated castor oil  
PEG-60 almond glycerides  
PEG-60 castor oil  
PEG-60 com glycerides  
PEG-60 glyceryl isostearate, P. g. stearate  
PEG-60 hydrogenated castor oil  
PEG-60 lanolin  
PEG-70 mango glycerides  
PEG-75 lanolin  
PEG-75 shea butter glycerides  
PEG-75 shorea butter glycerides  
PEG-80 hydrogenated castor oil  
PEG-80 jojoba acid/alcohol  
PEG-80 sorbitan laurate  
PEG-100 castor oil  
PEG-100 hydrogenated castor oil  
PEG-120 jojoba acid/alcohol  
PEG-200 trihydroxystearin  
Poloxamer 407  
Polyglyceryl-3 oleate  
Polyglyceryl-6 dioleate  
Polyglyceryl-10 decaoleate, P. tetraoleate  
Polyisobutyl 20, 60, 80  
PPG-2-isodeceth-4, -6, -9, -12

PPG-3 isosteareth-9  
PPG-3 isoceteth-20 acetate  
PPG-5-ceteth-10 phosphate  
PPG-5-ceteth-20  
PPG-6-decyltetradeceth-12, -20, -30  
PPG-12-PEG-65 lanolin oil  
PPG-15 stearyl ether  
PPG-18 butyl ether  
PPG-24 butyl ether  
PPG-26-buteth-26  
PPG-33 butyl ether  
PPG-33-buteth-45  
PPG-40-PEG-60 lanolin oil  
PPG-50 cetyl ether  
Propylene glycol dicaprylate, dicaprylate/  
dicaprate  
Ricinoicamide DEA  
Ricinoleth-40  
Sodium alpha olefin sulfonate  
Sodium lauryl sulfate  
Sodium methylphenathalenesulfonate  
Trieunanolamine  
Trioctanol  
Tromethamine

**Solvent**

Acetic acid  
Acetone  
Alcohol, A. denat.  
Benzophenone  
Butoxydiglycol  
Butyl acetate  
n-Butyl alcohol  
Butyl myristate, B. stearate  
Butylene glycol  
C9-11 isoparaffin  
C10-11 isoparaffin  
C10-13 isoparaffin  
Caprylic alcohol  
Castor (Ricinus communis) oil  
Cetearyl octanoate  
Cetyl stearyl octanoate  
Chlorobutanol  
Decyl alcohol  
Diethylene glycol  
Diethylene glycol dibenzoate  
Diethyl sebacate  
Diisocetyl adipate  
Diisopropyl adipate, D. sebacate  
Dimethyl phthalate  
Dipropylene glycol

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## Functions

Dipropylene glycol dibenzoate  
Ethoxydiglycol  
Ethyl acetate, E. lactate  
Ethyl myristate, E. oleate  
2-Ethylhexyl isostearate  
Glycerin  
Glycofurof  
Heptane  
Hexyl alcohol  
Hexylene glycol  
Isobutyl stearate  
Isocetyl salicylate  
Isodecyl benzoate, I. isononanoate  
Isodecyl octanoate, I. oleate  
Isododecane  
Isocicosane  
Isohexadecane  
Isopropyl alcohol, I. myristate  
Isostearyl stearoyl stearate  
Laureth-2 acetate  
Methoxydiglycol  
Methoxyvisopropanol  
Methyl alcohol  
Methyl propanediol  
Methylene chloride  
MEK  
MIBK  
Morpholine  
Octyl benzoate, O. isononanoate  
Octyl laurate, O. palmitate  
Octyldodecyl lactate  
Olive oil PEG-6 esters  
Peanut oil PEG-6 esters  
Pentane  
Petroleum distillates  
PEG-6 methyl ether  
PEG-12  
PEG-20 hydrogenated castor oil  
PEG-33 castor oil  
PEG-50 glyceryl cocoate  
Polyglyceryl-2 dioleate  
Polyglyceryl-3 diisostearate  
Polyoxyethylene glycol dibenzoate  
Polypropylene glycol dibenzoate  
PPG-2 myristyl ether propionate  
PPG-3  
PPG-20 lanolin alcohol ether  
Propyl alcohol  
Propylene carbonate  
Propylene glycol  
Propylene glycol dibenzoate  
Propylene glycol methyl ether  
Propylene glycol myristate  
Pyridine  
Sesame (Sesamum indicum) oil  
Stearyl heptanoate  
Toluene  
Xylene

**SPF booster**

Borjao sorbilis extract  
Isohexadecyl salicylate  
Styrene/acrylates copolymer  
Titanium dioxide  
Yeast (Saccharomyces cerevisiae) extract (Faex)

**Stabilizer**

Acrylates-VA crosspolymer  
Acrylates/ceteth-20 methacrylates copolymer  
Acrylates/stearth-20 methacrylate copolymer  
Acrylates/vinyl isodecanoate crosspolymer  
Alkyldimethylamine oxide  
C10 polycarbonyl polyglycol ester  
Calcium alginate  
Cocamidopropyl dimethylamine lactate  
Cocamine oxide  
Colloidal silica sols  
Cyclodextrin  
Disodium EDTA  
Gellan gum

Glyceryl diisostearate, G. stearate SE  
Glyceryl mono-di-tri-caprylate  
Hydrogenated coco-glycerides  
Hydrogenated C12-18 triglycerides  
Hydrogenated tallow glycerides  
Hydrolyzed oat flour  
Hydroxyoctacosanyl hydroxystearate  
Karaya (Sterculia urens) gum  
Laureth-3  
Maltitol  
Methylated cyclodextrin  
Oleamide  
PEG-40 stearate  
PEG-40/dodecyl glycol copolymer  
Perfluoropolyethylisopropyl ether  
Polyethylene paste  
PPG-5 lanolin wax  
PPG-7-buteth-10  
PPG-10 cetyl ether phosphate  
Propylene carbonate, P. glycol alginate  
PVM/MA decadiene crosspolymer  
Sodium acrylates/vinyl isodecanoate crosspolymer  
Sodium carbomer  
Sorbitan laurate  
Stearic hydrazide  
2,2',4,4'-Tetrahydroxybenzophenone  
Tricaprin  
Tricaprylin  
Trilaurin  
Trimyristin  
Tripalmitin  
Tristearin

**Stimulant**

Capsicum frutescens extract  
Eleuthero ginseng (Acanthopanax senticosus) extract  
Guarana (Paullinia cupana) extract  
Lactococcus hydrolysate  
Methylsilanol elastinate  
Methylsilanol hydroxyproline aspartate  
TEA-hydroiodide  
Tocopheryl nicotinate  
Urocanic acid  
Yeast (Saccharomyces cerevisiae) extract (Faex)  
Zedoary (Curcuma zedoaria) oil  
Zinc DNA

**Sunscreen**

Basil (Basilicum sanrum) oil extract  
Basil (Ocimum basilicum) extract  
Benzophenone-3 -4  
3-Benzylidene camphor  
Borjao sorbilis extract  
C12-15 alkyl benzoate  
Coffee (Coffea arabica) bean extract  
Ethyl salicylate  
Glyceryl PABA  
Homosalate  
Hydroquinone-beta-D-glucopyranoside  
Isoamyl p-methoxycinnamate  
Isopropylbenzyl salicylate  
Job's tears (Coix lacryma-jobi) extract  
Menthyl anthranilate  
Octyl dimethyl PABA, O. methoxycinnamate  
Octyl salicylate, O. triazone  
Oryzanol  
Pansy (Viola tricolor) extract  
PEG-25 PABA  
Phenylbenzimidazole sulfonic acid  
Rice (Oryza sativa) bran oil  
TEA-salicylate  
Titanium dioxide

**Sunscreen UVB**

Benzophenone-5  
Eclipta alba extract  
PEG-25 PABA  
Steareth-100  
Tridecyl salicylate

**Superfating agent**

Linoleamide DEA  
PEG-20 almond glycerides  
PEG-60 lanolin  
PEG-75 lanolin

**Surfactant**

Alkyl dimethyl betaine  
Alkyldimethylamine oxide  
Ammonium cocoyl sarcosinate  
Ammonium C12-15 alkyl sulfate  
Ammonium dimethicone copolyol sulfate  
Ammonium laureth-5 sulfate  
Ammonium laureth-12 sulfate  
Ammonium laureth sulfate  
Ammonium lauroyl sarcosinate  
Ammonium lauryl sulfate, A. l. sulfosuccinate  
Ammonium myreth sulfate  
Ammonium nonoxynol 4 sulfate  
Azelamide MEA  
C20-40 alcohol ethoxylate  
C30-50 alcohol ethoxylate  
C40-60 alcohol ethoxylate  
Calcium dodecylbenzene sulfonate  
Calcium laurate  
Ceteareth-2 phosphate  
Ceteareth-5 phosphate  
Ceteareth-10 phosphate  
Cetoleth-25  
Cetyl betaine, C. phosphate  
Cocamide MEA ethoxylate  
Cocamidopropyl betaine, potassium salt  
Cocamidopropyl betaine ammonium salt  
Cocamidopropyl hydroxy sultaine  
Cocamidopropyl hydroxy sultaine, ammonium salt  
Cocamidopropyl hydroxy sultaine, potassium salt  
Cocamidopropylamine oxide  
Coceth-7 carboxylic acid  
Coco-glucoside  
Cocoamphodiacetate lauryl-laureth sulfate  
Cocoamphodiacetate lauryl sulfate  
Cocoamphodiacetate tridecyl sulfate  
Coco phosphatidyl PG-dimonium chloride  
N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Cocoyl glutamic acid  
Cocoyl hydrolyzed soy protein  
Cocoyl hydroxyethyl imidazoline  
C11-15 pareth-9, -12, -20, -30, -40  
C12-13 pareth sulfate  
C12-13 pareth-5 carboxylic acid  
C12-15 pareth-12  
C14-15 pareth-8 carboxylic acid  
DEA-oleth-5-phosphate  
DEA-oleth-20-phosphate  
Deceth-3, -6, -8  
Decyltetradeceth-25  
Diceteareth-10 phosphoric acid  
Dimethicone copolyol  
Dimethicone copolyol almondate, D. c. isostearate  
Dimethicone copolyol laurate, D. c. olivate  
Dimethicone copolyol phthalate  
Dimethicone copolyolamine  
Dimethicone propyl PG-betaine  
Diocryldodeceth-2 lauroyl glutamate  
Diocryldodeceth-5 lauroyl glutamate  
Diocryldodecyl lauroyl glutamate  
Disodium capryloamphodiacetate  
Disodium cocoamphodiacetate  
Disodium hydrogenated tallow glutamate  
Disodium laneth-5 sulfosuccinate  
Disodium lauramido MEA-sulfosuccinate  
Disodium laureth sulfosuccinate  
Disodium oleamido MIPA-sulfosuccinate  
Disodium oleamido PEG-2 sulfosuccinate  
Disodium oleth-3 sulfosuccinate  
Disodium ricinoleamido MEA-sulfosuccinate  
Disodium tallamido MEA-sulfosuccinate  
Disteareth-2 lauroyl glutamate

## Functions

Distearein-3 lauroyl glutamate  
 Ethoxylated fatty alcohol  
 Ethoxylated glycerol sorbitan saturated fatty acid ester  
 Ethoxylated glycerol sorbitan unsaturated fatty acid ester  
 Glycereth-25 PCA isostearate  
 Glycereth-26 phosphate  
 Glyceryl hydroxystearate  
 Hydrogenated tallowyl glutamic acid  
 Isopropyl hydroxybutyramide dimethicone copolyol  
 Lauramidopropyl betaine  
 Laureth-1, -2, -3, -4, -7, -12, -16  
 Laureth-3 carboxylic acid, L. phosphate  
 Laureth-5 carboxylic acid  
 Laureth-11 carboxylic acid  
 Lauroyl sarcosine  
 Lauryl dimethylamine cyclocarboxypropylolate  
 Lauryl hydroxyethyl imidazoline  
 Linoleamide DEA  
 Magnesium laureth-8 sulfate  
 Meroxapal 105, 171, 172  
 MEA-lauryl sulfate  
 Mixed isopropanolamines myristate  
 Myreth-7  
 Myristoyl sarcosine  
 Myristyl alcohol  
 Nonoxynol-7, -9, -13, -15  
 Nonoxynol-10 carboxylic acid  
 Octoxynol-10, -12  
 Octyldodeceth-10, -16  
 Oleoyl sarcosine  
 Oleth-2 phosphate  
 Oleth-5 phosphate  
 Oleyl betaine  
 Oleyl hydroxyethyl imidazoline  
 Palmitamine oxide  
 Palmityl betaine  
 PCA ethyl cocoyl arginate  
 PEG-7 hydrogenated castor oil  
 PEG-8 caprylic/capric glycerides  
 PEG-8 laurate  
 PEG-8 stearate  
 PEG-15 glyceryl stearate  
 PEG-23 glyceryl isostearate  
 PEG-27 lanolin  
 PEG-30 lanolin  
 PEG-40 castor oil  
 PEG-40 glyceryl stearate  
 PEG-40 jojoba oil, P. lanolin  
 PEG-60 glyceryl isostearate, P. g. stearate

PEG-80 jojoba oil, P. sorbitan laurate  
 PEG-120 jojoba oil  
 Pentasodium triphosphate  
 Poloxamer 101, 122  
 Polyglyceryl-2 dioleate  
 Polysiloxane-polyether copolymer  
 Potassium cocoyl glycinate  
 Potassium cocoyl hydrolyzed collagen  
 Potassium C9-15 phosphate ester  
 Potassium lauroyl hydrolyzed collagen  
 Potassium lauryl sulfate  
 Potassium myristoyl hydrolyzed collagen  
 Potassium oleoyl hydrolyzed collagen  
 Potassium palmitate  
 Potassium undecylenoyl hydrolyzed collagen  
 PPG-2-isodeceth-4 -6 -9 -12  
 PPG-6 C12-18 pareth-11  
 Protein hydrolysates  
 Quaternium-80  
 Quillaja saponaria extract  
 Raffinose laurate, R. myristate, R. oleate  
 Raffinose palmitate, R. stearate  
 Ricinoleamidopropyl betaine  
 Silicone quaternium-1, -8, -9  
 Sodium alpha olefin sulfonate  
 Sodium cocoamphoacetate  
 Sodium cocoyl hydrolyzed wheat protein  
 Sodium cocoyl isethionate  
 Sodium C12-13 sulfate  
 Sodium C12-14 pareth-2 sulfate  
 Sodium C12-15 pareth-3 sulfonate  
 Sodium C12-15 pareth-7 carboxylate  
 Sodium C12-15 pareth-7 sulfonate  
 Sodium C12-15 pareth-8 carboxylate  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium C12-18 alkyl sulfate  
 Sodium C13-17 alkane sulfonate  
 Sodium C14-16 olefin sulfonate  
 Sodium cetearyl sulfate  
 Sodium cetyl oleyl sulfate  
 Sodium coco-tallow sulfate  
 Sodium cocoyl glutamate  
 Sodium cocoyl hydrolyzed collagen  
 Sodium cocoyl hydrolyzed soy protein  
 Sodium cocoyl sarcosinate  
 Sodium dimethicone copolyol acetyl methylaurate  
 Sodium hydrogenated tallow glutamate  
 Sodium isodecyl sulfate  
 Sodium laureth-5 carboxylate  
 Sodium laureth-11 carboxylate  
 Sodium laureth-13-carboxylate  
 Sodium laureth sulfate  
 Sodium lauroamphoacetate

Sodium lauroyl glutamate  
 Sodium lauroyl hydrolyzed collagen  
 Sodium lauroyl sarcosinate, S. L. laurate  
 Sodium magnesium laureth sulfate  
 Sodium metnyl cocoyl laurate  
 Sodium methyl oleoyl laurate  
 Sodium myristoyl glutamate  
 Sodium myristoyl hydrolyzed collagen  
 Sodium myristoyl sarcosinate  
 Sodium myristyl sulfate  
 Sodium nonoxynol-6 phosphate  
 Sodium octoxynol-2 ethane sulfonate  
 Sodium octyl sulfate  
 Sodium oleoyl hydrolyzed collagen  
 Sodium stearoyl hydrolyzed collagen  
 Sodium trideceth sulfate  
 Sodium undecylenoyl hydrolyzed collagen  
 Sodium/TEA-lauroyl hydrolyzed collagen  
 Sodium/TEA-lauroyl hydrolyzed keratin  
 Sorbitan isostearate  
 Stearoyl sarcosine  
 Sulfated castor oil  
 TEA-cocoyl glutamate  
 TEA-cocoyl hydrolyzed collagen  
 TEA-cocoyl hydrolyzed soy protein  
 TEA-C12-15 alkyl sulfate  
 TEA-hydrogenated tallow glutamate  
 TEA-lauroyl glutamate  
 TEA-lauroyl keratin amino acids  
 TEA-lauroyl sarcosinate  
 TEA-lauryl sulfate  
 TEA-myristoyl hydrolyzed collagen  
 Tocophereth-5 -10 -18 -20 -30 -50 -70  
 Trideceth-7 carboxylic acid  
 Trideceth-9  
 Trideceth-19-carboxylic acid  
 Tridecyl ethoxylate  
 Triethanolamine C10-14 sulfate  
 Tri-lauryl phosphate  
 Wheat germamidopropyl betaine  
 Yucca vera extract

Suspending agent

Acrylates/ceteth-20 methacrylates copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Algin  
 Bentonite  
 C10 polycarbamyl polyglycol ester  
 Calcium alginate  
 Carbomer, C. 934  
 Carrageenan (Chondrus crispus)  
 Cellulose gum  
 Cetyl hydroxyethylcellulose

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## Functions

Dihydrogenated tallow phthalic acid amide  
 Diacetyl phthalic acid amide  
 Guar (Cyanopsis tetragonoloba) gum  
 Hectonite  
 Hydroxypropylcellulose  
 Isobutylene/MA copolymer  
 Magnesium aluminum silicate  
 Methylcellulose  
 Pentasodium triphosphate  
 Polyethylene, P. micronized  
 Propylene glycol alginate  
 Quaternium-18 bentonite  
 Quaternium-18 hectonite  
 Sodium magnesium silicate  
 Sodium polynaphthalenesulfonate  
 Stearalkonium bentonite, S. hectonite  
 Steareth-10 allyl ether/acrylates copolymer  
 Tragacanth (Astragalus gummifer) gum  
 Tribehenin  
 Trihydroxystearin  
 Trometamine magnesium aluminum silicate  
 Xanthan gum

**Sweetener**

Calcium saccharin  
 Fructose  
 Glycyrrhizic acid  
 Glycyrrhizic acid  
 Glycyrrhizin, ammoniated  
 Hydrolyzed corn starch  
 Lactose  
 Maltitol  
 Mannitol  
 Saccharin  
 Sodium saccharin  
 Sorbitol  
 Sucrose

**Tanning accelerator**

Acetyl tyrosine  
 Carrot (Daucus carota) extract  
 Copper acetyl tyrosinate methylsilanol  
 Dihydroxyacetone  
 Disodium malyl tyrosinate  
 Eclipta alba extract in white emulsion  
 Glucose tyrosinate

**Thickener**

Acrylate-MA crosspolymer  
 Acrylate/C10-C30 alkyl acrylate crosspolymer  
 Acrylate/ceteth-20 itaconate copolymer  
 Acrylate/ceteth-20 methacrylates copolymer  
 Acrylate/steareth-20 itaconate copolymer  
 Acrylate/steareth-20 methacrylate copolymer  
 Acrylate/steareth-30 acrylate copolymer  
 Acrylate/vinyl isodecanoate crosspolymer  
 Acrylic acid/acrylonitrile copolymer  
 Algin  
 Aluminum/magnesium hydroxide stearate  
 Ammonium acrylates/acrylonitrile copolymer  
 Ammonium alginate  
 Arachidyl alcohol  
 Behenic acid  
 Behenyl alcohol, B. behenate  
 Bentonite  
 C10 polyacarbonyl polyglycol ester  
 C12-15 alcohols  
 C12-16 alcohols  
 C18-36 acid

Calcium alginate  
 Calcium carrageenan  
 Caprylic alcohol  
 Carbomer  
 Carboxymethyl hydroxyethylcellulose  
 Carrageenan (Chondrus crispus)  
 Cellulose, C. gum  
 Cetaryl alcohol, C. behenate  
 Cetaryl octanoate, C. stearate  
 Cetostearyl stearate  
 Cetyl alcohol  
 Cetyl hydroxyethylcellulose  
 Cetyl myristate, C. palmitate  
 Cocamide  
 Cocamide MEA, C. MIPA  
 Cocamidopropylamine oxide  
 Coco-betaine  
 Coco-rapeseedate  
 Coco/oleamidopropyl betaine  
 Cocoyl amido hydroxy sulfo betaine  
 Cocoyl monoethanolamide ethoxylate  
 Colloidal silica sols  
 DEA-hydrolyzed lecithin  
 DEA-linoleate  
 DEA-oleth-3 phosphate  
 DEA oleth-10 phosphate  
 Decyl alcohol  
 Dextran  
 Dextrin  
 Dilaureth-10 phosphate  
 Dioleth-8 phosphate  
 DNIHF  
 Ethoxylated fatty alcohol  
 Gellan gum  
 Glyceryl behenate, G. stearate  
 Glyceryl polymethacrylate  
 Guar (Cyanopsis tetragonoloba) gum  
 Guar hydroxypropyltrimonium chloride  
 Hectonite  
 Hexyl alcohol  
 Hydrated silica  
 Hydrogenated rapeseed oil  
 Hydrogenated starch hydrolysate  
 Hydrogenated talloweth-60 myristyl glycol  
 Hydrolyzed oat flour  
 Hydrolyzed transgenic collagen  
 Hydroxyethylcellulose  
 Hydroxypropyl chitosan  
 Hydroxypropyl guar  
 Hydroxypropyl methylcellulose  
 Hydroxypropylcellulose  
 Isoceteth-10  
 Isostearamide DEA  
 Isostearamidopropylamine oxide  
 Isostearamphopropionate  
 Jaxca wax  
 Keratin (Sterculia urens) gum  
 Lactamide DEA, L. MEA, L. MIPA  
 Lactamidopropyl betaine  
 Lacteth-10  
 Lacteth-linoleic DEA  
 Lactyl-linoleyl diethanolamide  
 Lactyl-myristoyl diethanolamide  
 Lactyl alcohol, L. betaine  
 Lactamide DEA, L. MEA  
 Lactic acid  
 Lactic acid  
 Lysine bean (Ceratonia siliqua) gum  
 Magnesium aluminum silicate

MDM hydantoin  
 Methylcellulose  
 Monomillonite  
 Mynstamide DEA, M. MEA  
 Mynstamine oxide  
 Mynstyl alcohol  
 Octacosanyl stearate  
 Oleamide, O. DEA, O. MEA  
 Palmitamide MEA  
 Pectin  
 PEG-2 laurate  
 PEG-3 distearate, P. lauramide  
 PEG-3 lauramine oxide  
 PEG-4 diisostearate, P. oleamide  
 PEG-5M  
 PEG-6 beeswax  
 PEG-7 hydrogenated castor oil  
 PEG-8  
 PEG-8 dioleate, P. distearate  
 PEG-8 stearate  
 PEG-9M  
 PEG-12 beeswax  
 PEG-18 glyceryl oleate/cocotate  
 PEG-23M  
 PEG-28 glyceryl tallowate  
 PEG-40 jojoba oil  
 PEG-45M  
 PEG-50 tallow amide  
 PEG-55 propylene glycol oleate  
 PEG-75 stearate  
 PEG-90M  
 PEG-100 stearate  
 PEG-120 methyl glucose dioleate  
 PEG-150 distearate  
 PEG-150 pentaerythrityl tetrastearate  
 PEG-160M  
 PEG-200 glyceryl stearate  
 PEG-200 glyceryl tallowate  
 Pentaerythrityl tetrabehenate  
 Pentaerythrityl tetrastearate  
 Poloxamer 105, 124, 185, 237, 238, 338, 407  
 Polyacrylic acid  
 Polysorbate 20  
 Potassium alginate, P. chloride  
 Potassium oleate, P. stearate  
 PPG-5-ceteth-10 phosphate  
 Propylene glycol stearate  
 PVM/MA decadiene crosspolymer  
 PVP  
 Quaternium-18 bentonite  
 Quaternium-18 hectonite  
 Rapeseed oil, ethoxylated high erucic acid  
 Ricinoleamide MEA  
 Sesamide DEA  
 Sodium acrylates/vinyl isodecanoate crosspolymer  
 Sodium carbomer, S. carrageenan  
 Sodium ceteth-13-carboxylate  
 Sodium chloride  
 Sodium magnesium silicate, S. stearate  
 Sorbitan sesquiosostearate, S. tristearate  
 Soyamide DEA  
 Soyamidopropyl betaine  
 Starch polyacrylonitrile copolymer-potassium salt  
 Starch polyacrylonitrile copolymer-sodium salt  
 Stearalkonium bentonite, S. hectonite  
 Stearamide  
 Stearamide DEA, S. MEA, S. MEA-stearate  
 Stearamidopropyl dimethylamine lactate  
 Stearamine oxide

**3 BETTER IDEAS.****1 BETTER SOURCE.**

**CARBOPOL**  
**Ultrez**  
 New easiest to  
 use carbomer

**CARBOPOL**  
**ITO**  
**POLYMER**  
 For surfactant-based  
 emulsions

**PEMULEN**  
 POLYMERIC EMULSIFIERS  
 Eliminates surfactant-based  
 emulsifiers

**BF Goodrich**  
 Talk to the global leader.



## Functions

Steareth-10 allyl ether/acrylates copolymer  
Stearic acid  
Stearyl alcohol  
Synthetic beeswax  
Tallowamide MEA  
TEA-acrylates/acrylonitril copolymer  
Tragacanth (*Astragalus gummifer*) gum  
Tribenenin  
Trihydroxystearin  
Trimethylamine magnesium aluminum silicate  
Wheat germamide DEA  
Wheat germamidopropyl betaine  
Xanthan gum

### Thixotrope

Bentonite  
Hectorite  
Sodium magnesium silicate  
Stearalkonium bentonite

### Toner

*Althea officinalis* extract  
Clover (*Trifolium pratense*) extract  
Dog rose (*Rosa canina*) hips extract  
Ginseng (*Panax ginseng*) extract  
Horsetail extract  
Lemon bioflavonoids extract  
Meadowsweet (*Spiraea ulmaria*) extract  
Nettle (*Urtica dioica*) extract  
Rose (*Rosa multiflora*) extract  
Rosemary (*Rosmarinus officinalis*) extract

### UVA absorber

Benzophenone-1, -2, -3, -4, -6, -8, -9, -11, -12  
Butyl methoxydibenzoylmethane  
Corallina officinalis  
Isopropyl dibenzoylmethane  
Menthyl anthranilate  
2,2',4,4'-Tetrahydroxybenzophenone  
Titanium dioxide  
Zinc oxide

### UVB absorber

*Argania spinosa* oil  
Benzophenone-1, -2, -3, -4, -6, -9, -11  
Corallina officinalis  
DEA-methoxycinnamate  
Drometizole  
Ethyl dihydroxypropyl PABA  
Etoctylene  
Homosalate  
Isoamyl p-methoxycinnamate  
Isopropyl methoxycinnamate  
Isopropylbenzyl salicylate  
4-Methylbenzylidene camphor  
Octocrylene  
Octrizole  
Octyl dimethyl PABA  
Octyl methoxycinnamate  
Octyl salicylate, O. triazone  
PABA  
PEG-25 PABA  
Phenylbenzimidazole sulfonic acid  
Shea butter, ethoxylated  
TEA-salicylate  
Titanium dioxide  
TriPABA panthenol  
Zinc oxide

### Vegetable oil

Apricot (*Prunus armeniaca*) kernel oil  
Avocado (*Persea gratissima*) oil  
Baobab oil  
Calendula officinalis oil  
Chaulmoogra (*Taraktogenos kurzii*) oil  
Coconut (*Cocos nucifera*) oil  
Corn (*Zea mays*) oil  
Cottonseed (*Gossypium*) oil

Gold of pleasure oil  
Grape (*Vitis vinifera*) seed oil  
Hazel (*Corylus avellana*) nut oil  
Hybrid sunflower (*Helianthus annuus*) oil  
Hydrogenated coconut oil  
Hydrogenated cottonseed oil  
Hydrogenated vegetable oil  
Jojoba (*Buxus chinensis*) oil  
Kukui (*Aleurites moluccana*) nut oil  
Macadamia ternifolia nut oil  
Meadowfoam (*Limnathes alba*) seed oil  
Mexican poppy oil  
Palm (*Elaeis guineensis*) kernel oil  
Partially hydrogenated soybean oil  
Peach (*Prunus persica*) kernel oil  
Peanut (*Arachis hypogaea*) oil  
Pecan (*Carya illinoensis*) oil  
Pumpkin (*Cucurbita pepo*) seed oil  
Quinoa (*Chenopodium quinoa*) oil  
Rapeseed (*Brassica campestris*) oil  
Rice (*Oryza sativa*) bran oil  
Safflower (*Carthamus tinctorius*) oil  
Seabuckthorn oil  
Sesame (*Sesamum indicum*) oil  
Sisymbrium irio oil  
Soybean (*Glycine soja*) oil  
Sunflower (*Helianthus annuus*) seed oil  
Walnut (*Juglans regia*) oil  
Wheat (*Triticum vulgare*) germ oil  
Wild borage oil

### Vitamin

*Aesculus chinensis* extract  
Ascorbic acid  
Ascorbic acid polypeptide  
Ascorbyl palmitate  
Biotin  
Calcium pantothenate  
Cholecalciferol  
Cyanocobalamin  
Eclipta alba extract  
Emblica officinalis extract  
Equisetum arvense extract  
Ergocalciferol  
Esculin  
Ethyl linoleate  
Folic acid  
Laminaria japonica extract  
Marsilea minuta extract  
Melaleuca bracteata extract  
Menadione  
Nasturtium sinensis extract  
Nelumbium speciosum extract  
Niacin  
Niacinamide, N. ascorbate  
Nicotinamide  
Nicotinic acid  
Ocimum basilicum extract  
Panthenyl triacetate  
Pantothenic acid  
Phytonadione  
Pyridoxine HCl  
Retinol  
Retinyl acetate, R. palmitate  
Retinyl palmitate polypeptide  
Retinyl propionate  
Riboflavin tetraacetate  
Sodium ascorbate  
Thiamine HCl  
Tocopherol  
Tocopheryl acetate, T. succinate

### Wax

Bayberry (*Myrica cerifera*) wax  
Behenoxy dimethicone  
C16-18 alkyl methicone  
Candelilla (*Euphorbia cerifera*) wax  
Carnauba (*Copernicia cerifera*) wax

Ceresin  
Cetyl dimethicone, C. isooctanoate  
Dialkyldimethylpolysiloxane  
Dimethiconol hydroxystearate  
Dimethiconol stearate  
Hydrogenated castor oil  
Hydrogenated cottonseed oil  
Hydrogenated jojoba oil, H. j. wax  
Hydrogenated palm kernel oil  
Hydrogenated rapeseed oil  
Hydrogenated rice bran wax  
Hydrogenated vegetable oil  
Isooctadecyl isononanoate  
Japan (*Rhus succedanea*) wax  
Jojoba esters  
Montan (Montan cera) wax  
Ounicury wax  
Ozokerite  
Polyglyceryl-3 beeswax  
Spermaceti  
Stearoxymethicone/dimethicone copolymer  
Stearoxymethylsilane  
Synthetic candelilla wax  
Synthetic carnauba

### Wetting agent

Benzalkonium chloride  
Benzethonium chloride  
Cetalkonium chloride  
Ceteareth-20  
Ceteth-20  
Cetyl pyridinium chloride  
Cocamphodipropionic acid  
Decaglycerol monodiolate  
Deceth-9  
Dihydroabietyl methacrylate  
Dimethicone copolyol methyl ether  
Dimethicone copolyol phthalate  
Diocetyl sodium sulfosuccinate  
Ethyl hydroxymethyl oleyl oxazoline  
Hydroxylated milk glycerides  
Isolaurth-6  
Lanolin acid  
Lauryl pyrrolidone  
Lecithin  
Methyl hydrogenated rosinat  
Methyl rosinat  
Nonyl nonoxynol-5  
Octoxynol-8, 70  
Oleth-15  
Oleth-20 phosphate  
PEG-9 castor oil  
PEG-15 castor oil  
PEG-20 glyceryl stearate  
PEG-20 sorbitan trisostearate  
PEG-45 palm kernel glycerides  
PEG-60 almond glycerides, P. corn glycerides  
PEG-60 shea butter glycerides  
PEG-70 mango glycerides  
PEG-75 shorea butter glycerides  
PEG-80 sorbitan laurate  
Poloxamer 123, 181, 182, 184, 235, 334  
Polyether trisiloxane  
Polyglyceryl-3 oleate  
Polyglyceryl-6 dioleate  
Polyglyceryl-10 tetraoleate  
Polysorbate 60, 80  
PPG-2-isodeceth-4, -6, -9, -12  
PPG-10 lanolin alcohol ether  
Propylene glycol  
Sodium butoxyethoxy acetate  
Sodium capryloamphohydroxypropylsulfonate  
Sodium decyl diphenyl ether sulfonate  
Sodium dodecylphenyl ether sulfonate  
Sodium lauryl sulfate  
Sulfated castor oil  
Trisocetyl citrate  
Trisostearin PEG-6 esters  
Yucca vera extract

## Claims:

## 1. A cosmetic composition, comprising:

a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component randomly bonded to at least one poly(acrylic acid) component said polymer network capable of aggregation  
5 in response to a change in temperature; and

a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.

## 2. A cosmetic composition for topical application, comprising:

10 a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and

15 a cosmetically active agent selected to treat imperfections or disorders of the skin. said carrier and said agent disposed within an aqueous-based medium.

3. The cosmetic composition of claim 1, wherein the cosmetic composition is a shampoo and the cosmetically active agent comprises a cleansing surfactant.

20 4. The cosmetic composition of claim 1, wherein the cosmetic composition is a moisturizer and the cosmetically active agent comprises a moisturizer.

25 5. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunscreen and the cosmetically active agent comprises a uv-absorbing agent.

6. The cosmetic composition of claim 1, wherein the cosmetic composition is an acne cream and the cosmetically active agent comprises an antiacne agent.

5 7. The cosmetic composition of claim 1, wherein the cosmetic composition is a hair straightener and the cosmetic agent comprises a base for increasing the pH.

10 8. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunless tanning lotion and the cosmetically active agent comprises skin tinting agent.

15 9. The cosmetic composition of claim 1, wherein the cosmetic composition is an antiperspirant and the cosmetically active agent comprises aluminum chlorhydrate.

20 10. The cosmetic composition of claim 1, wherein the cosmetic composition is a shaving cream and the cosmetically active agent comprises an emollient and a foaming surfactant.

11. The cosmetic composition of claim 1, wherein the cosmetic composition is a face cosmetic and the cosmetically active agent comprises a pigment.

25 12. The cosmetic composition of claim 1 or 2, wherein the cosmetic agent comprises a hydrophobic material, wherein the cosmetically acceptable carrier stabilizes the hydrophobic material in the aqueous medium.

13. The cosmetic composition of claim 2, wherein said cosmetic agent selected to treat imperfections or disorders of the skin is selected from the group consisting of acidulents, antiacne agents, anti-aging agents, anti-inflammatories, anti-irritants, antioxidants, depilatories, detergents, disinfectants, emollients, exfoliants, humectants, lubricants, moisturizers, skin conditioners, skin protectants, skin lightening agents, skin soothing agents, sunscreens, tanning accelerators and mixtures thereof.

14. The composition of claim 4, wherein said composition further comprises a cosmetic agent selected from the group consisting of humectants and emollients.

15. The composition of claim 1 or 2, further comprising one or more additives selected from the group consisting of preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, antringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances

16. The composition of claim 1, wherein the cosmetic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, mousses, sprays, aerosols, pad-applied formulations and masks.

5 17. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 27 to 40°C.

18. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 30 to 37°C.

10 19. The composition of claim 1, wherein said composition is formulated as a product selected from the group consisting of baby products, baby shampoos, lotions, powders and creams; bath preparations, bath oils, tablets and salts, bubble baths, bath fragrances bath capsules; eye makeup preparations, eyebrow pencil,  
15 eyeliner, eye shadow, eye lotion, eye makeup remover, mascara; fragrance preparations, colognes, toilet waters, powders and sachets; noncoloring hair preparations, hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics: hair coloring preparations, hair dye, hair tints, hair color sprays, hair lighteners and hair bleaches;  
20 makeup preparations, face powders, foundations, leg and body paints, lipstick makeup bases, rouges and makeup fixatives; manicuring preparations, basecoats, undercoats, cuticle softeners, nail creams, nail extenders, nail polish and enamel, and remover; oral hygiene products, dentrifices, mouthwashes; personal cleanliness, bath soaps, detergents, deodorants, douches and feminine hygiene product; shaving preparations,  
25 aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap, preshave lotions; skin care preparations, skin cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders; moisturizers, night preparations, paste masks, skin fresheners; and suntan preparations, suntan creams, gels and lotions, and indoor tanning preparations.

20. The cosmetic composition of claim 1 or 2, wherein the poloxamer component is present in an amount in the range of about 0.01 to 20 wt% and the poly(acrylic acid component) is present in the amount of about 0.01 to 20 wt%.

5 21. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamers.

10 22. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamer components randomly bonded to a poly(acrylic acid) backbone.

15 23. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer composition comprises a plurality of poly(acrylic acid) components randomly bonded to a poloxamer component.

24. The cosmetic composition of claim 1, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

20 25. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and increase viscosity of the reversible viscosifying polymer network.

25 26. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and decrease viscosity of the reversible viscosifying polymer network.

27. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature without affecting viscosity of the reversible viscosifying polymer network..

5 28. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and increase viscosity of the reversible viscosifying polymer network.

10 29. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and decrease viscosity of the reversible viscosifying polymer network.

15 30. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature without affecting viscosity of the reversible viscosifying polymer network.

20 31. The cosmetic composition of claim 1, further comprising an additive selected to increase viscosity without affecting transition temperature of the reversible viscosifying polymer network.

32. The cosmetic composition of claim 1, further comprising an additive selected to decrease viscosity without affecting transition temperature of the reversible viscosifying polymer network.

25 33. The cosmetic composition of claim 1 or 2, characterized in that the gel remains translucent to light before and after response to the environmental stimulus.

34. The cosmetic composition of claim 1, wherein the poly(acrylic acid) is branched.

35. Method of making an cosmetic composition, comprising:

5 dissolving a poloxamer capable of aggregation in response to a change in temperature in acrylic acid monomer;

initiating polymerization of the monomer to form a poly(acrylic acid) randomly bonded to the poloxamer, so as to form a reversibly viscosifying polymer composition;

10 mixing the reversibly gelling polymer compositions with a cosmetic agent which imparts a desired cosmetic effect to the composition.

36. The method of claim 36, wherein a polymerization initiator is selected to provide the polymer network having a selected temperature of viscosification.

15

37. The method of claim 36, wherein one or more poloxamers are added.

38. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer network is present in an amount in the range of 0.01% 10%.

20



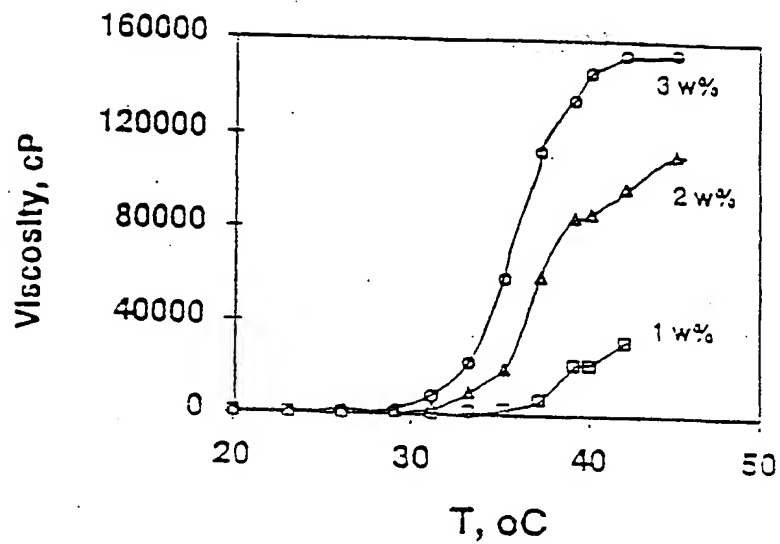


Figure 1.

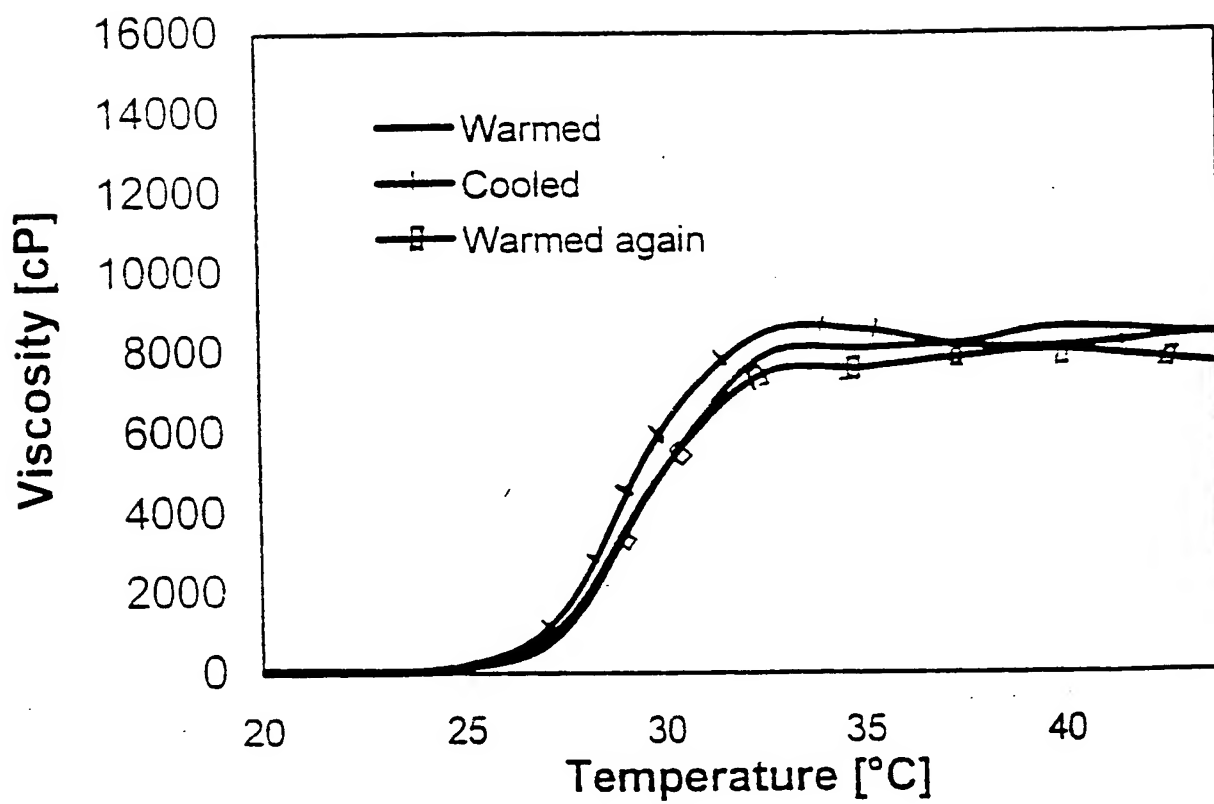


Figure 2

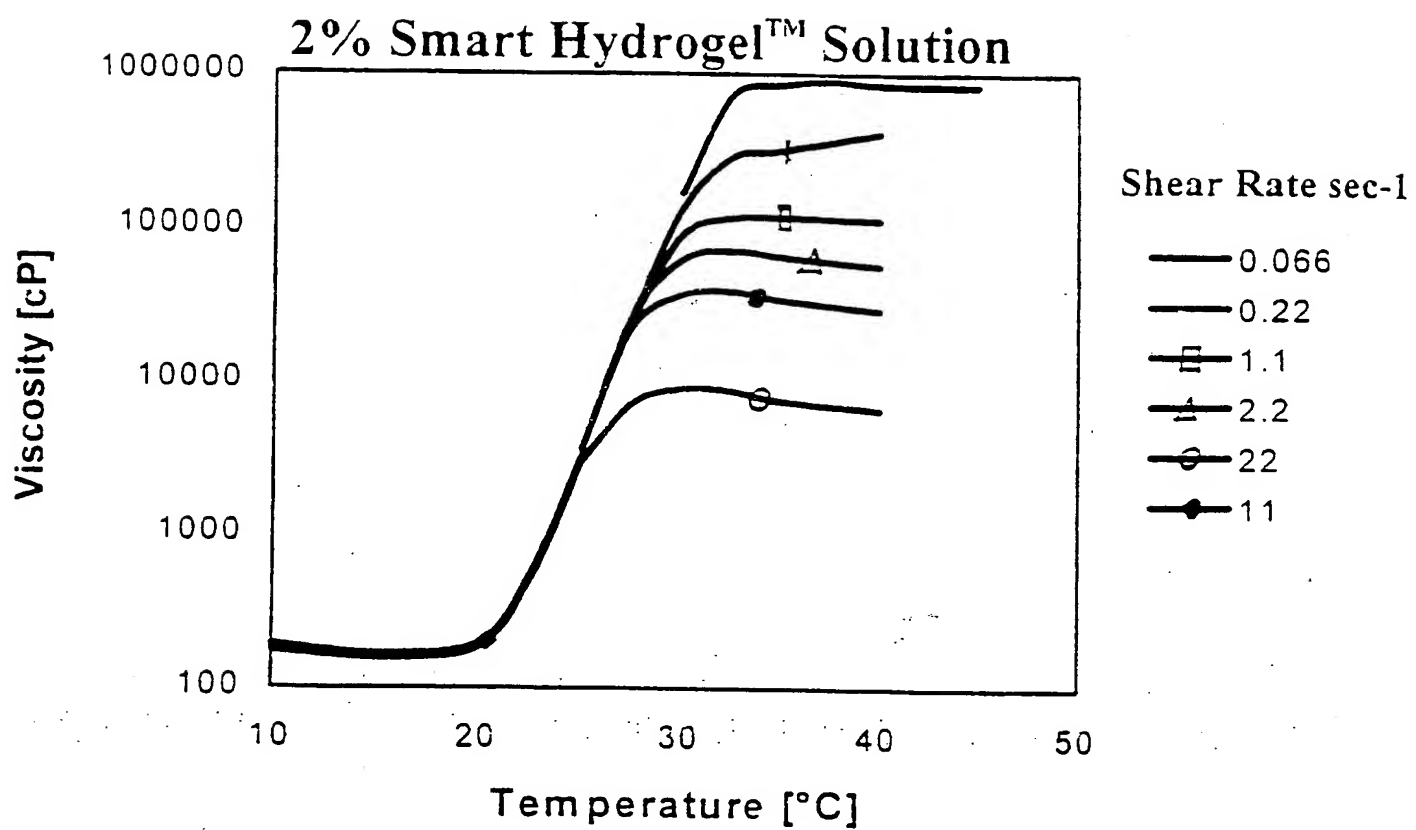


Figure 3

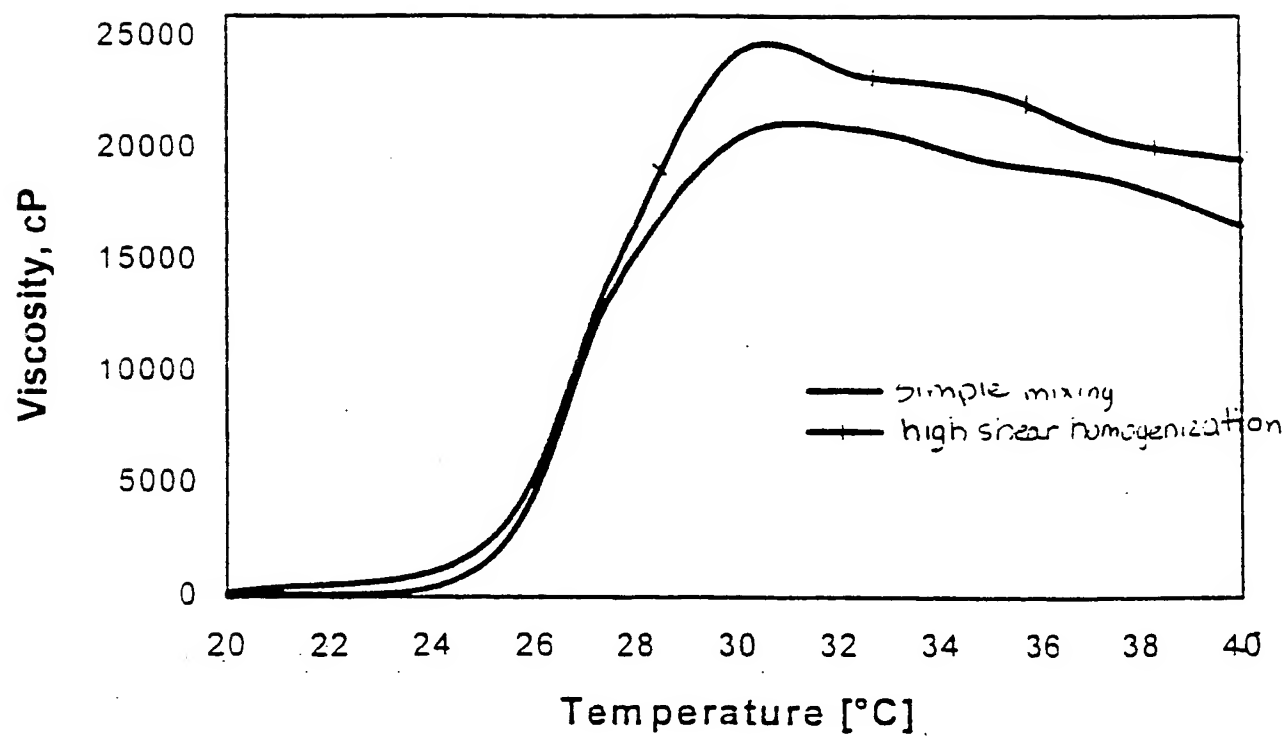


Figure 4

5/28

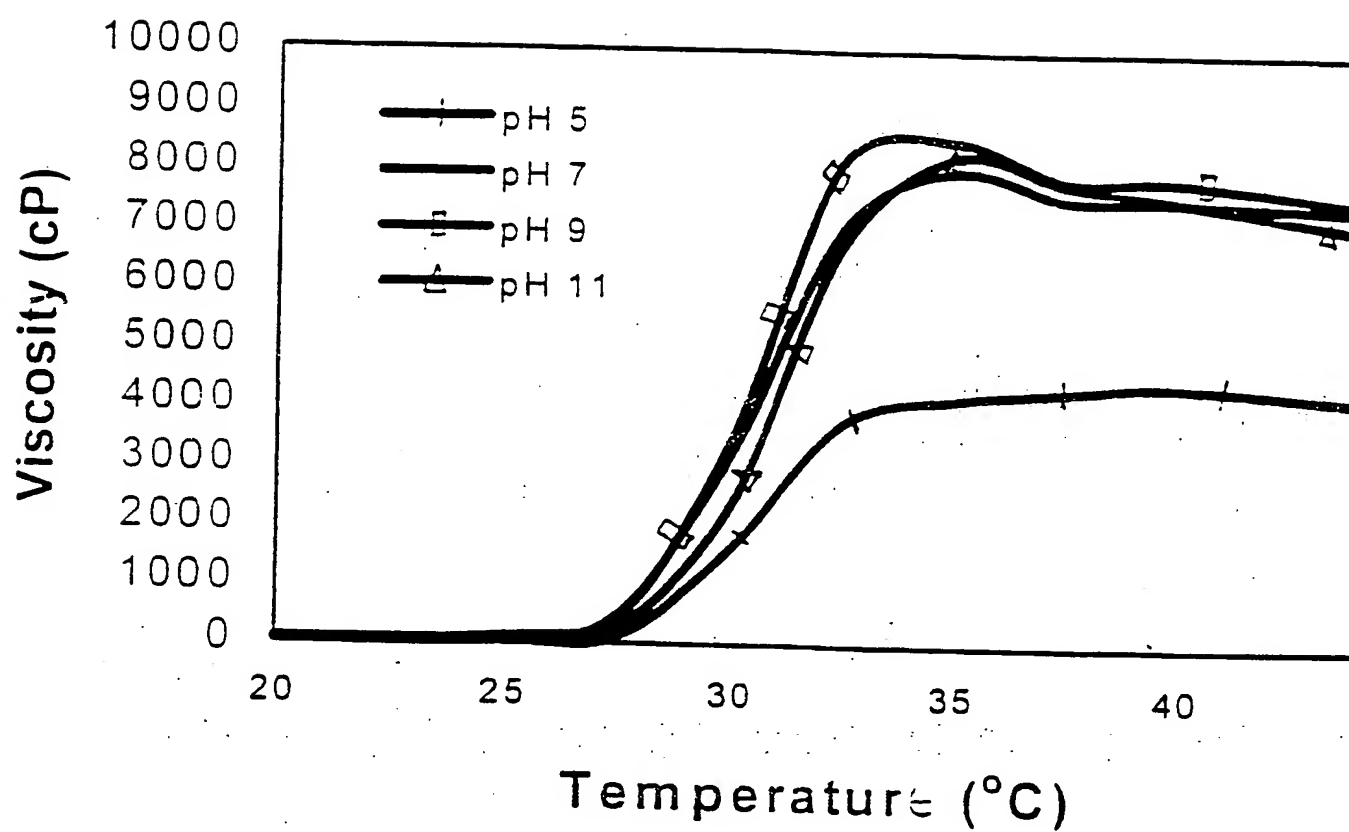


Figure 5

6/28

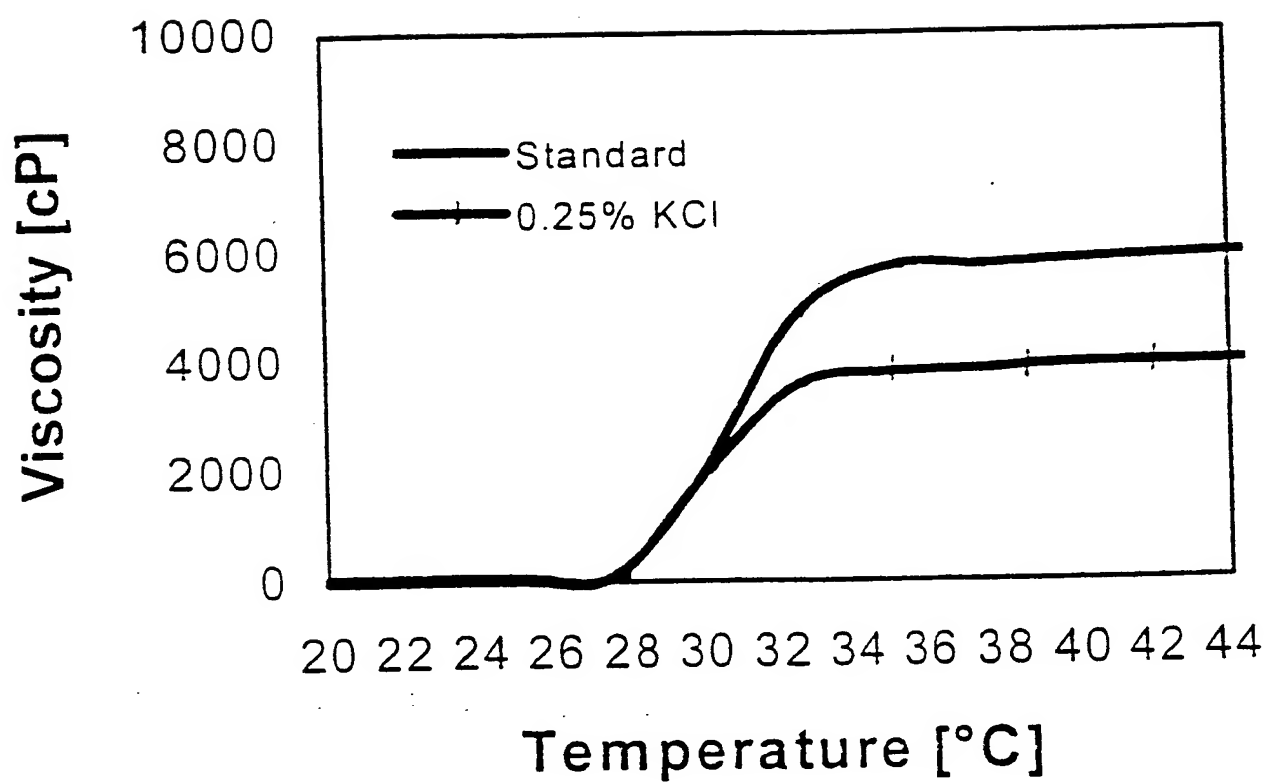


Figure 6

7/28

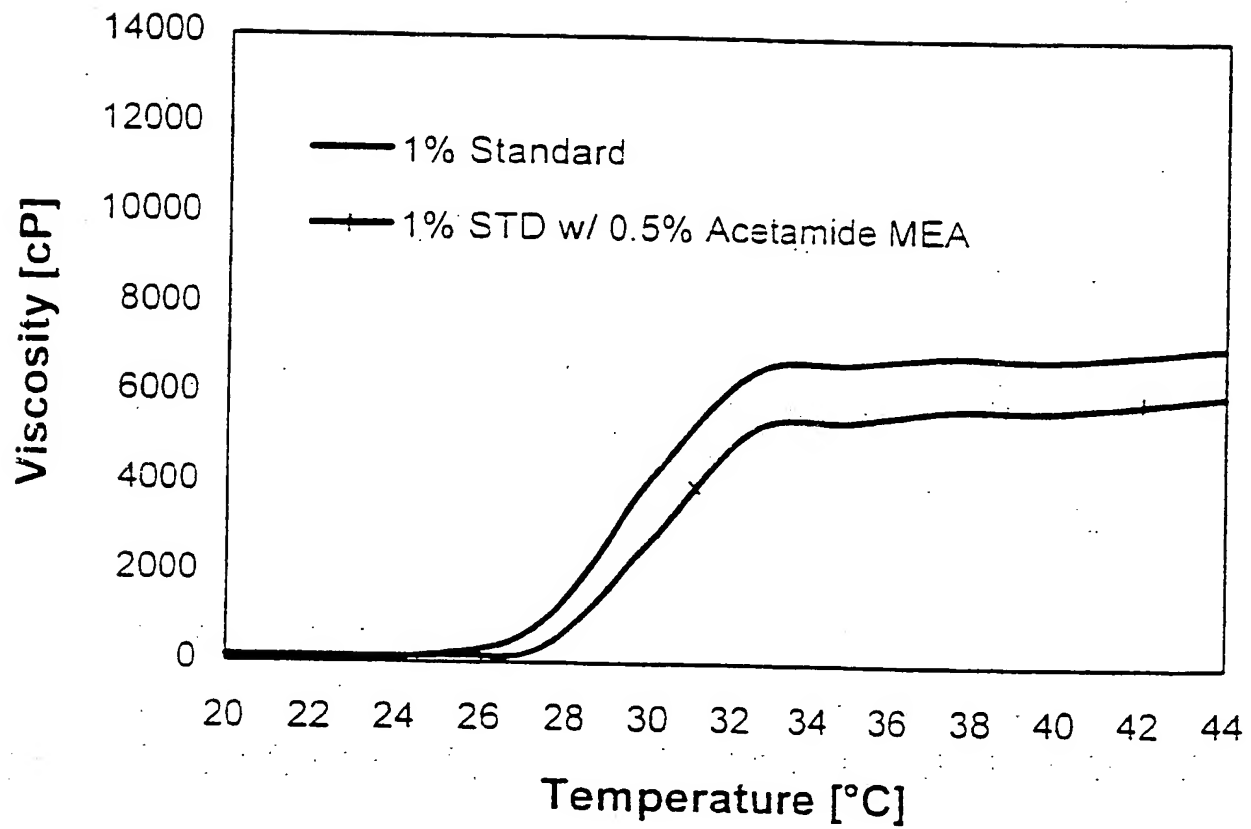


Figure 7

8/28

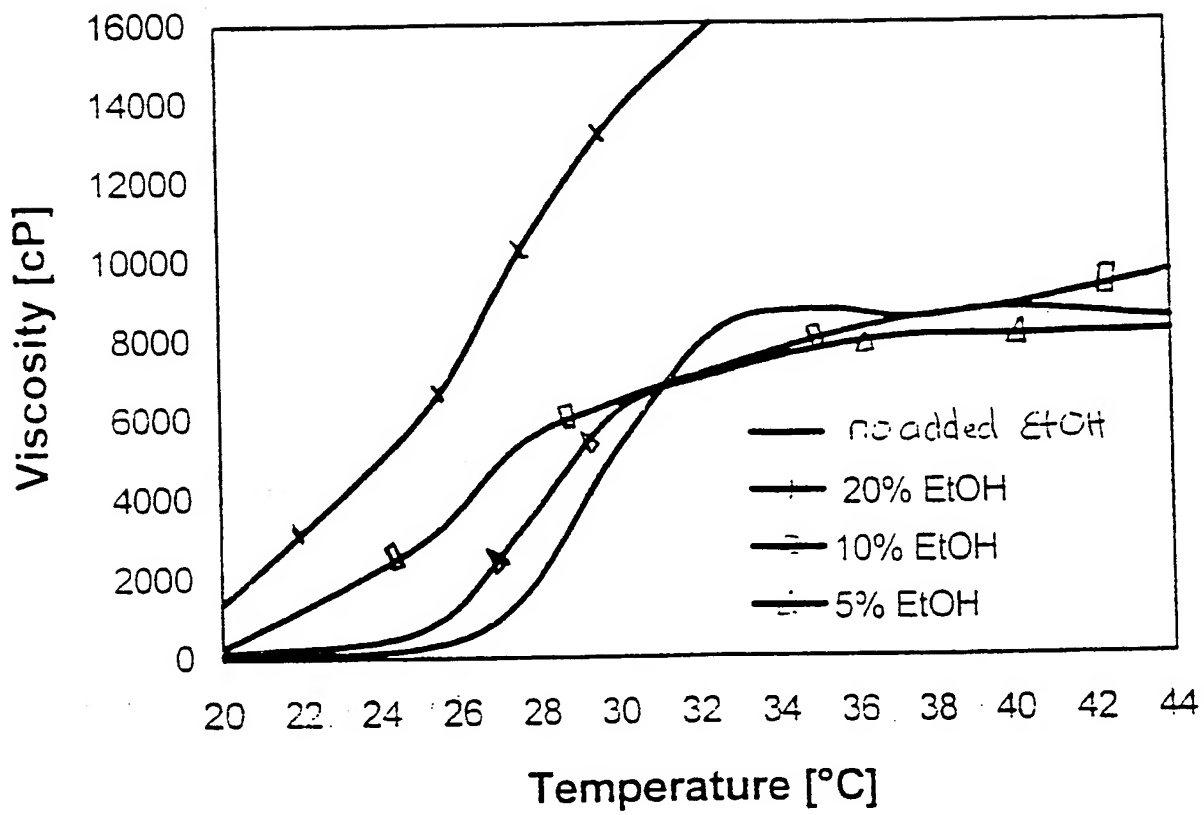


Figure 8



9/28

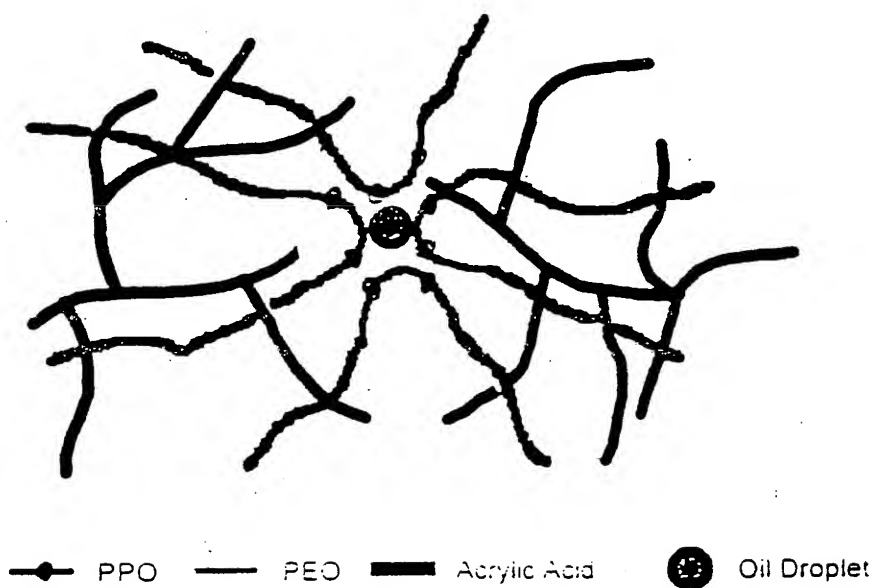
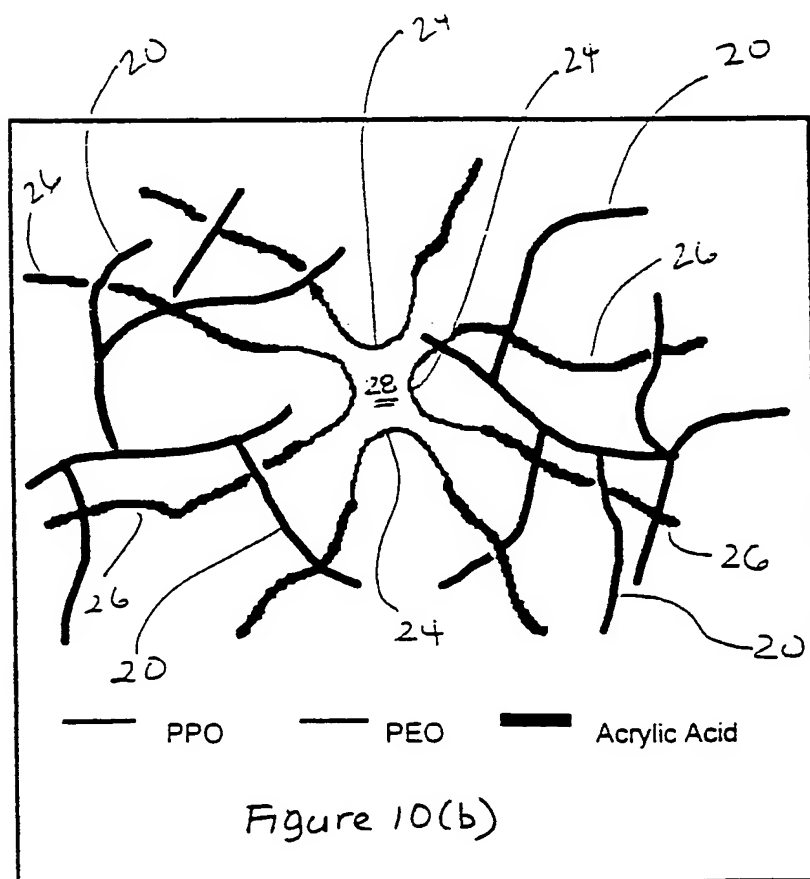
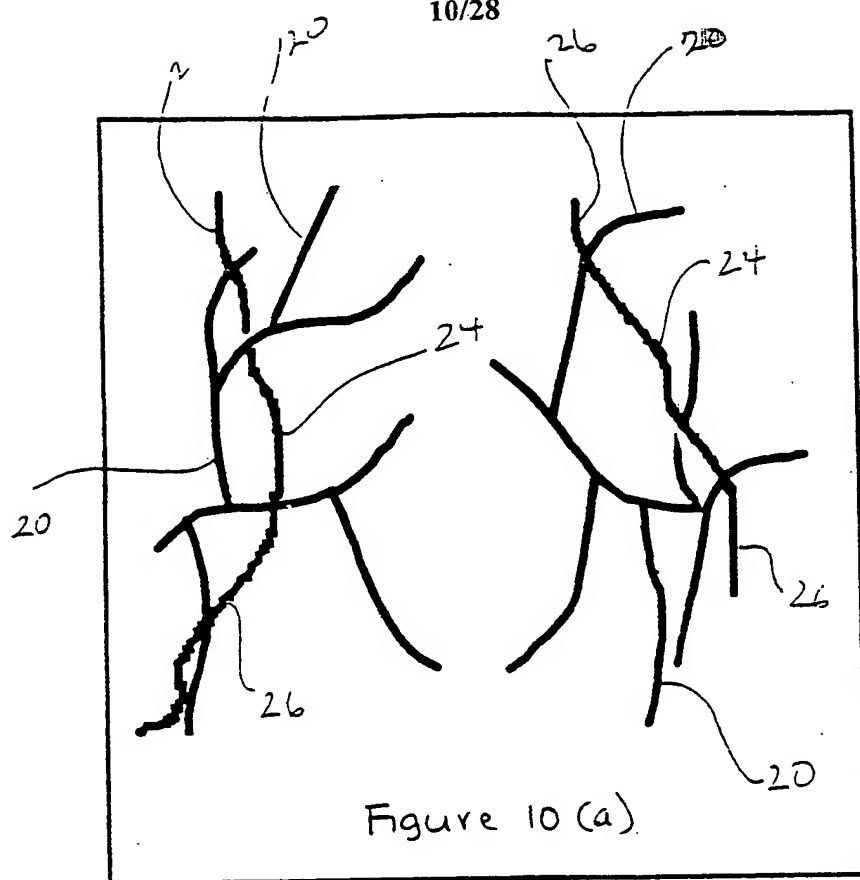


Figure 9

10/28



11/28

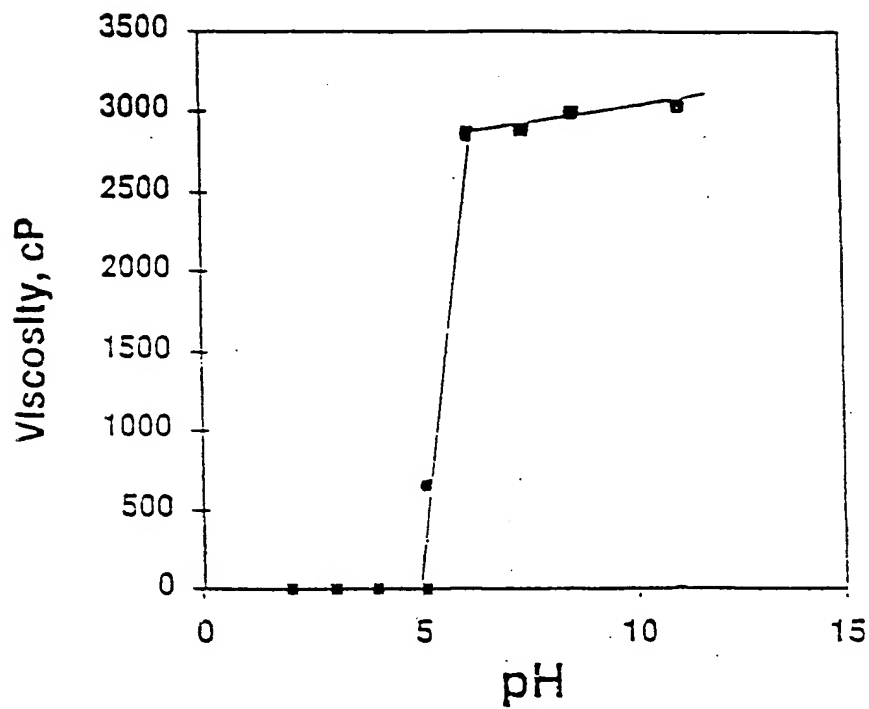


Figure 11

12/28

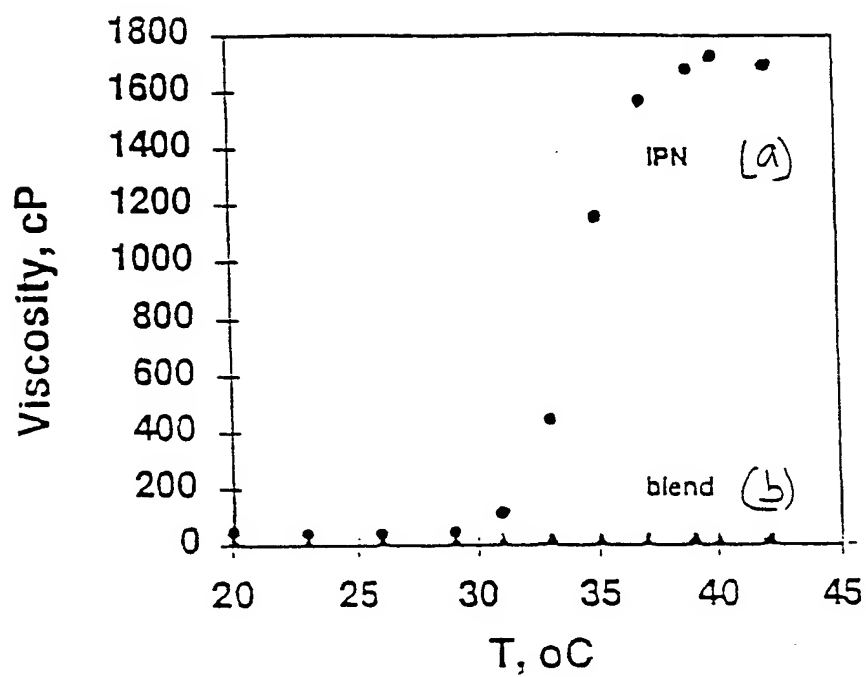


Figure 12

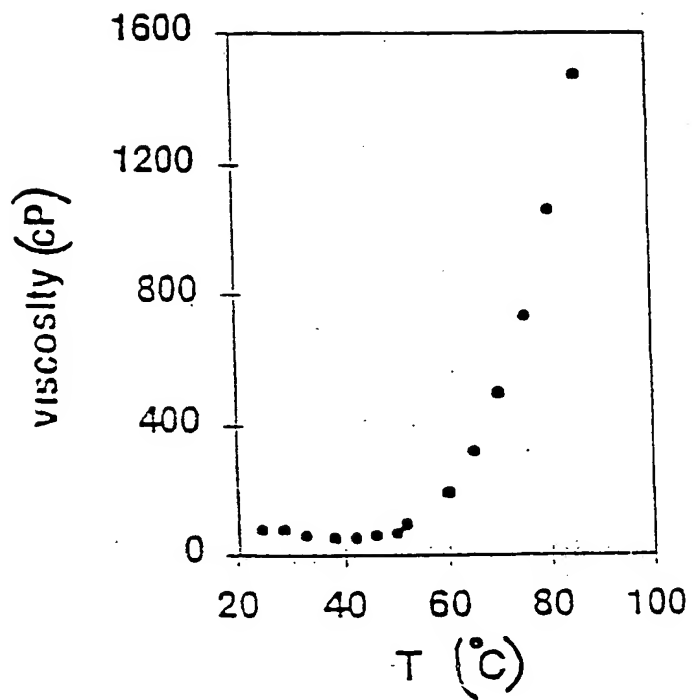


Figure 13

14/28

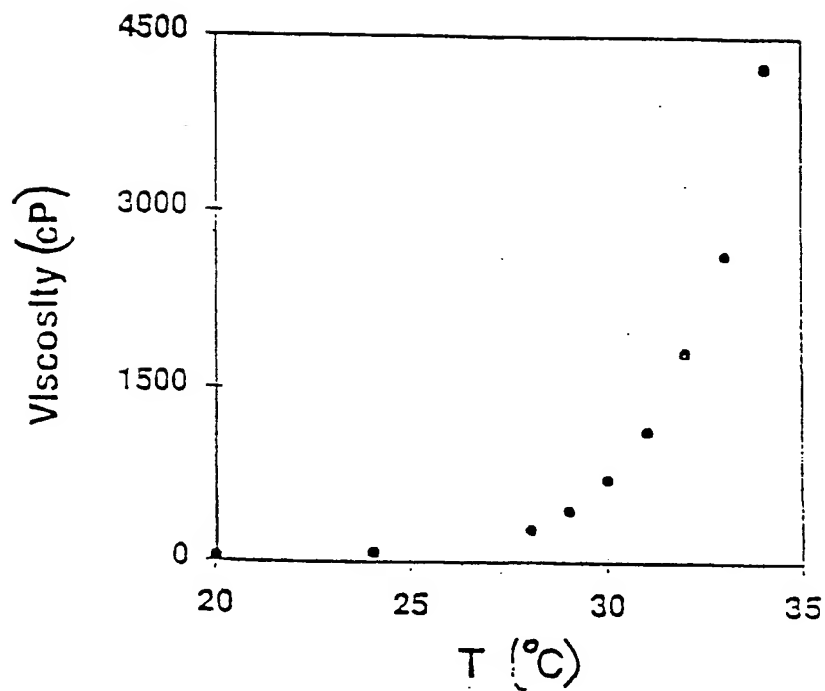


Figure 14

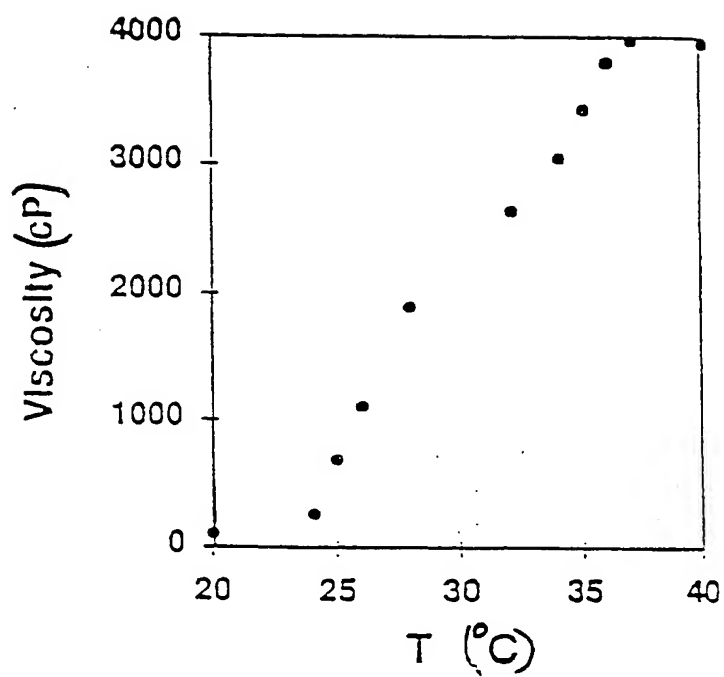


Figure 15

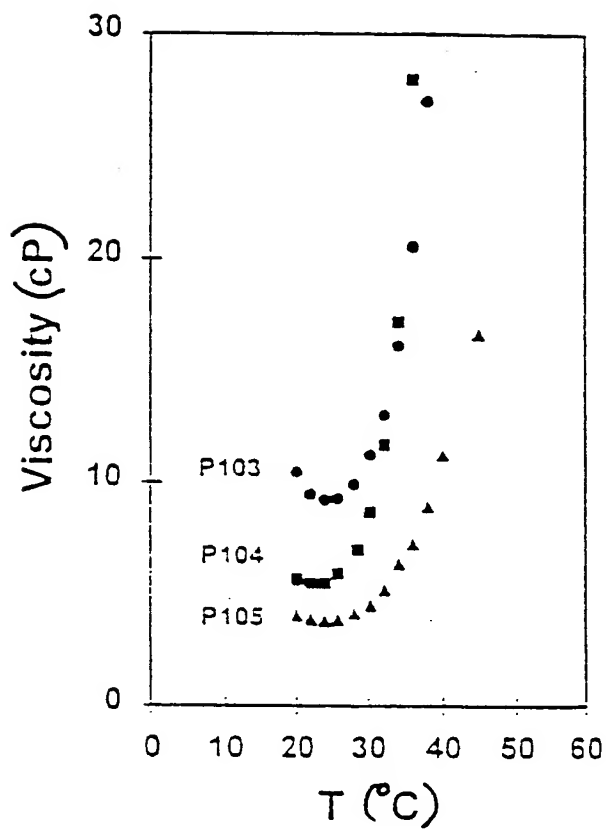


Figure 16



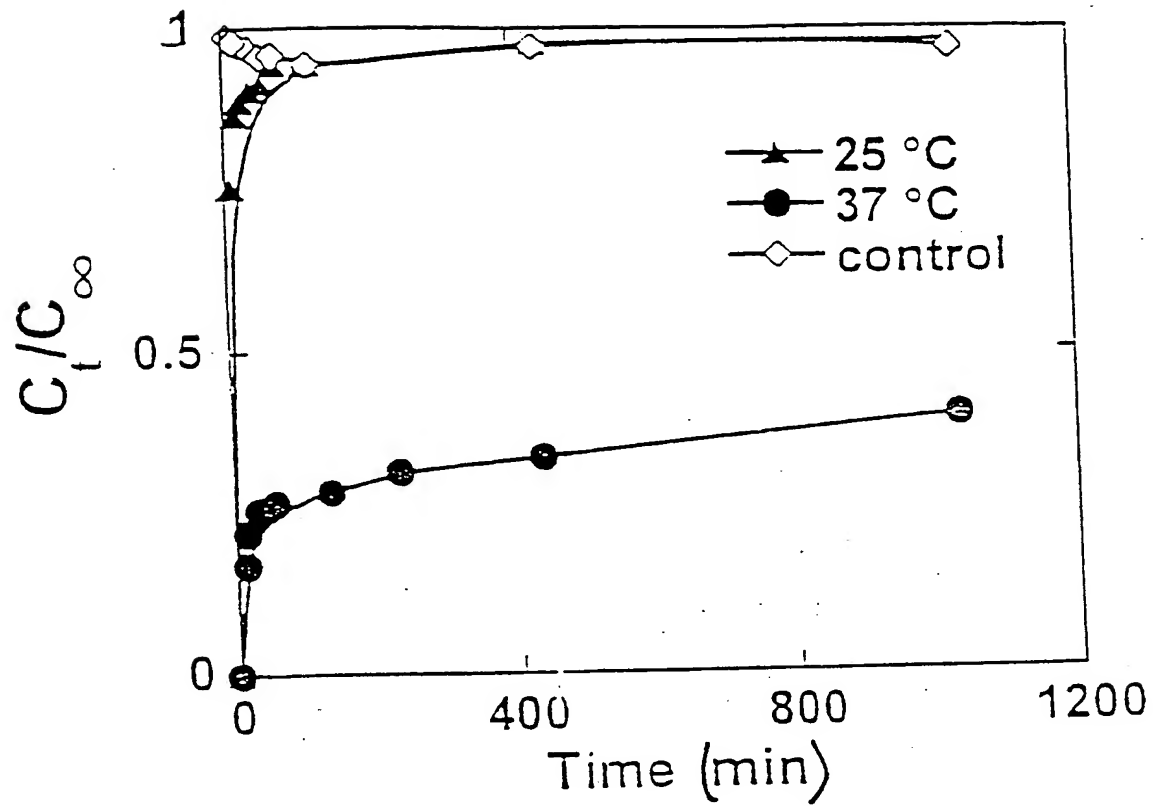


Figure 17

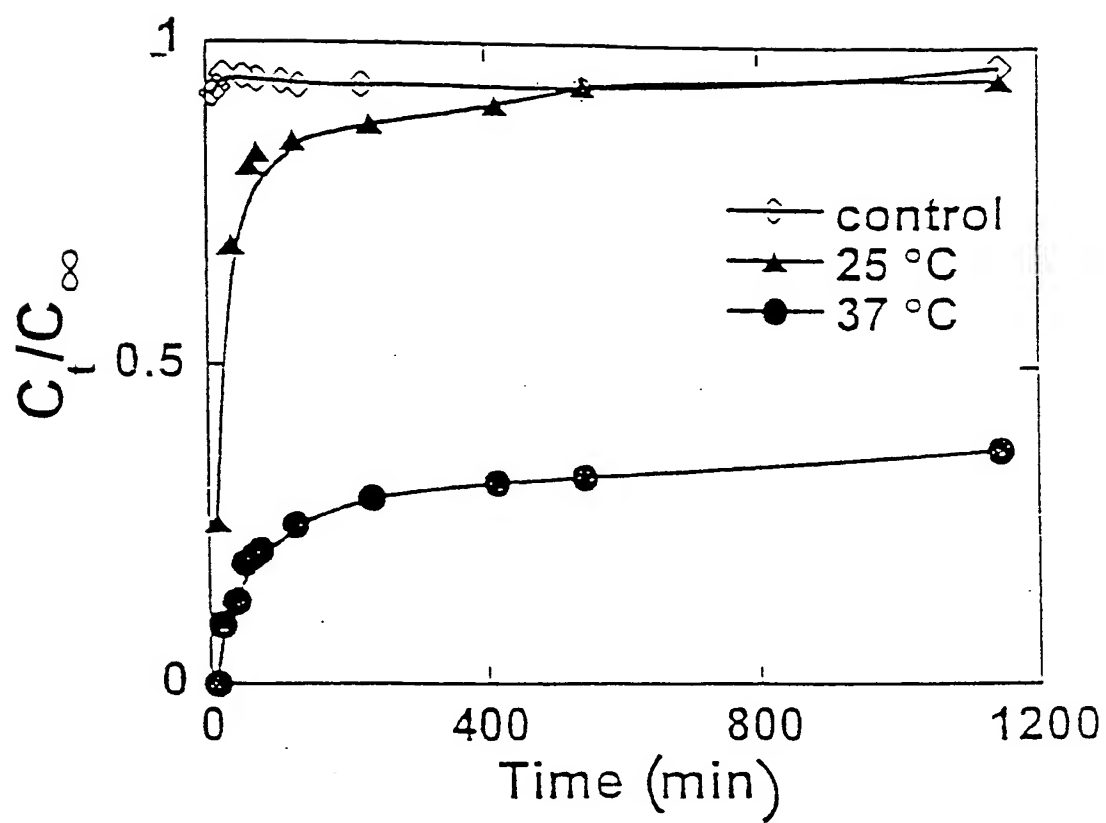


Figure 18

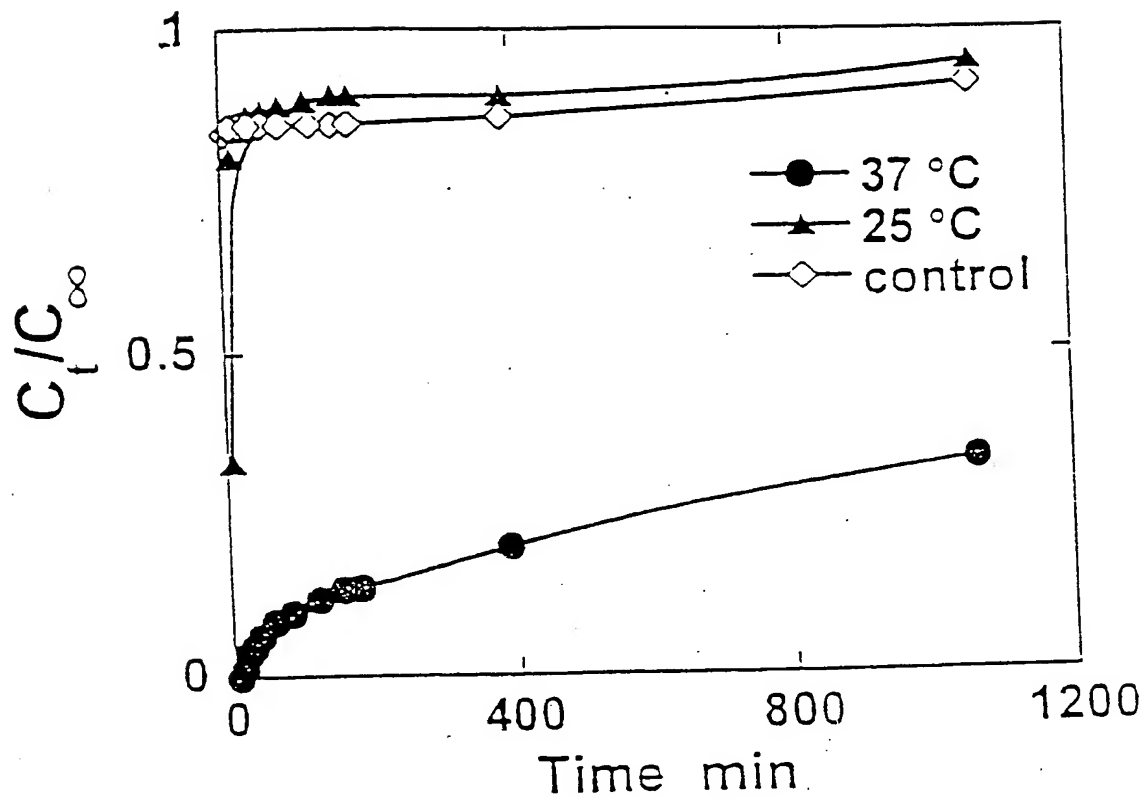


Figure 19

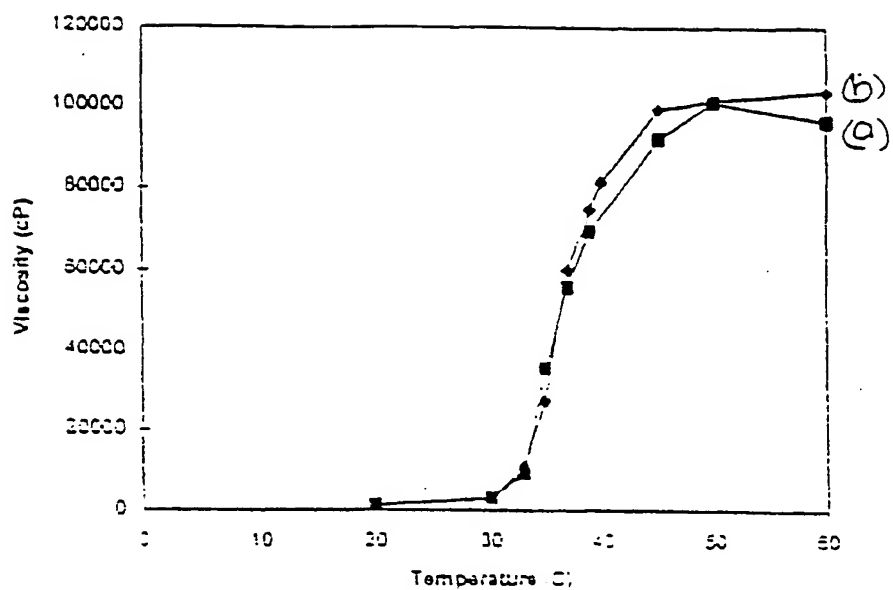


Figure 20

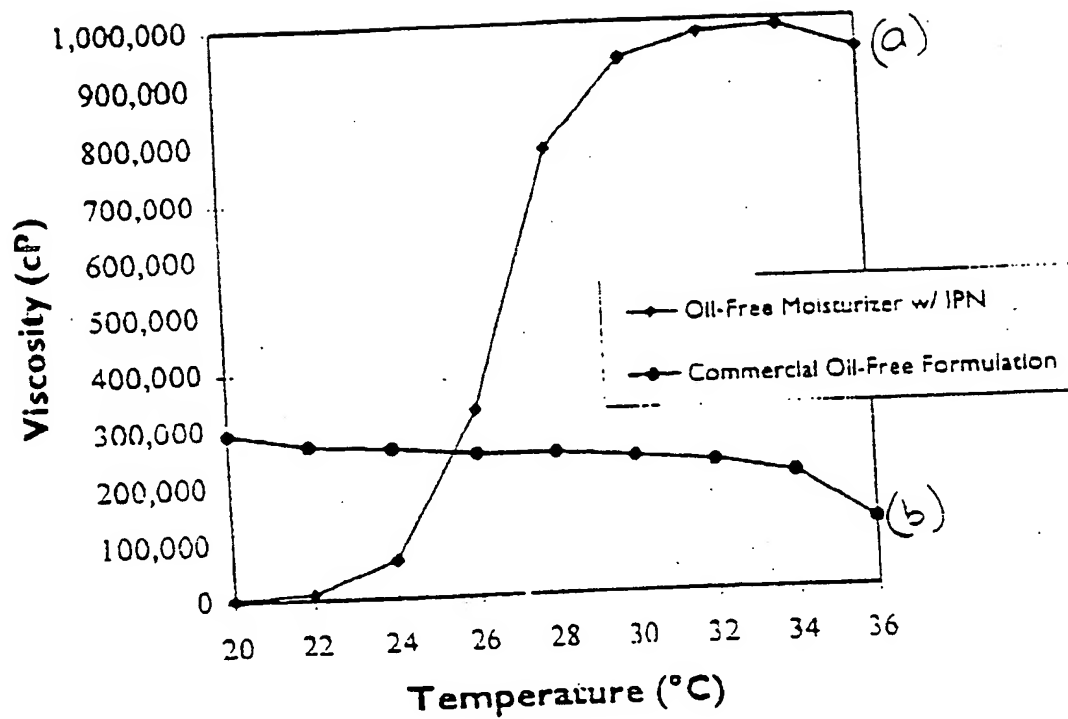


Figure 21

22/28

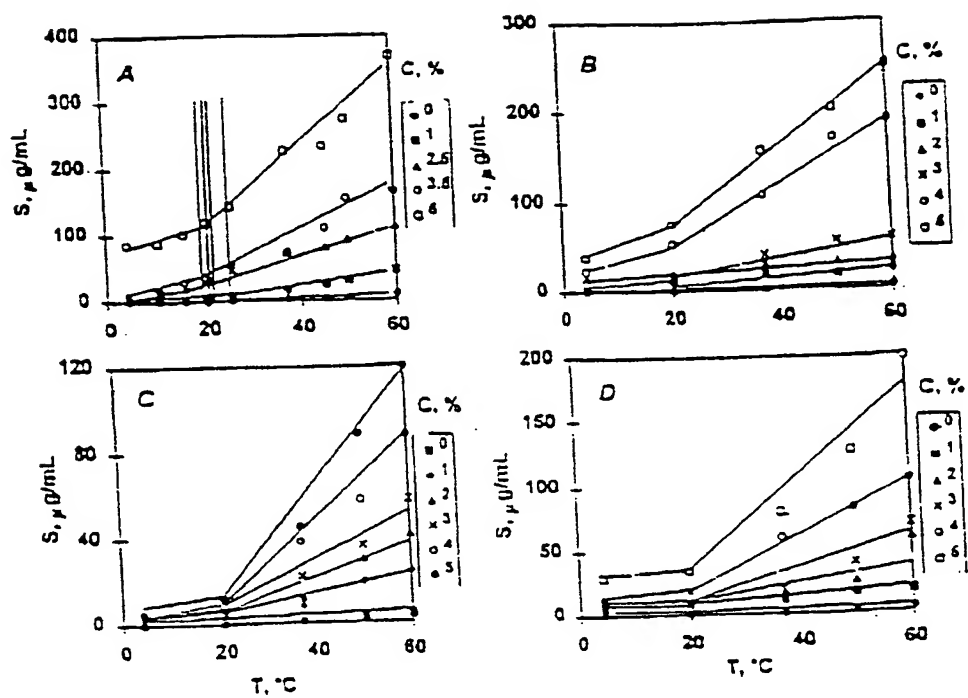
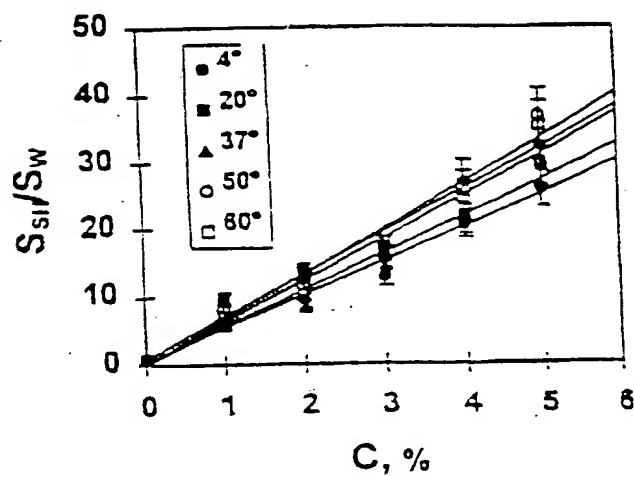


Figure 22



Figure

23

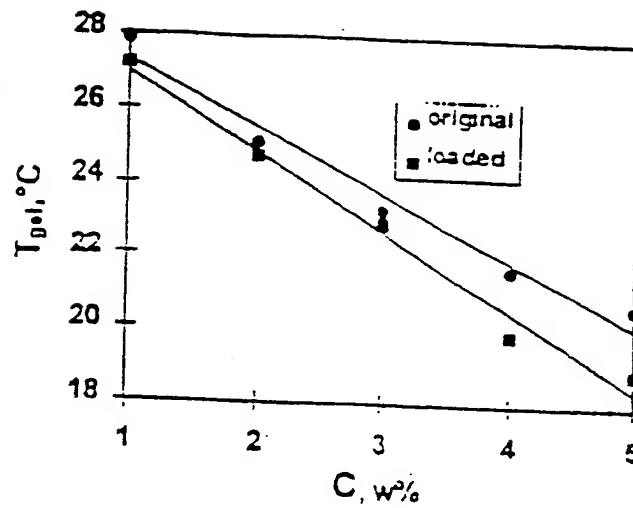
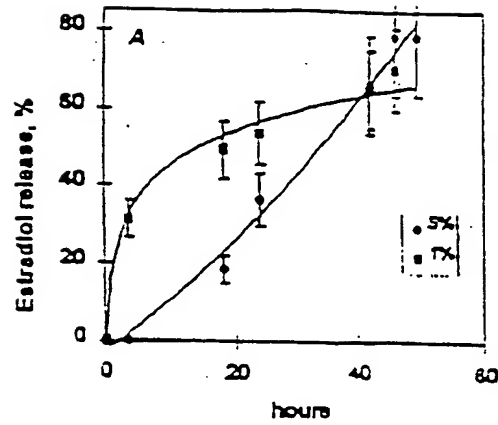


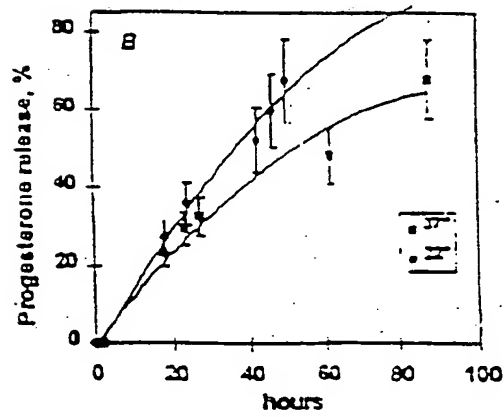
Figure 24



25/28



a



b

Figure 25

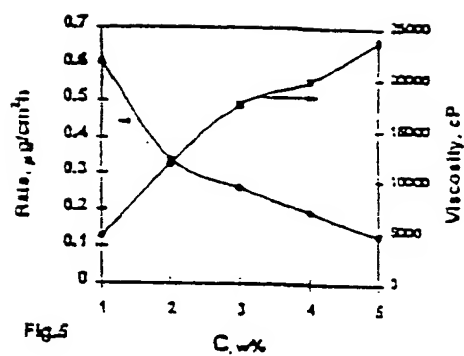


Figure 26

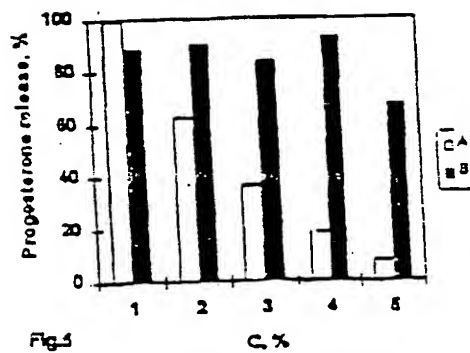


Figure 27

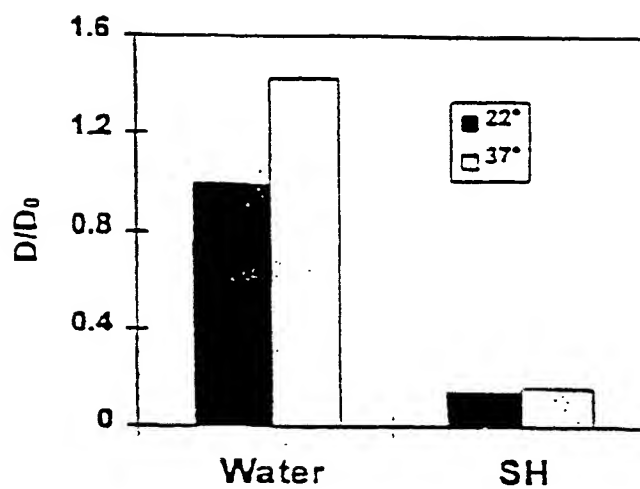


Figure 28

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/08931

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS: COSMETIC. POLYACRYLIC ACID. POLYMER NETWORK. POLOXAMER

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 5,662,892 A (BOLICH, JR. et al.) 02 September 1997, see entire document.	1-38
Y	US 5,106,609 A (BOLICH, JR et al.) 21 April 1992, see entire document.	1-38

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

03 AUGUST 1998

Date of mailing of the international search report

02 OCT 1998

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/08931

A. CLASSIFICATION OF SUBJECT MATTER:

US CL : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405



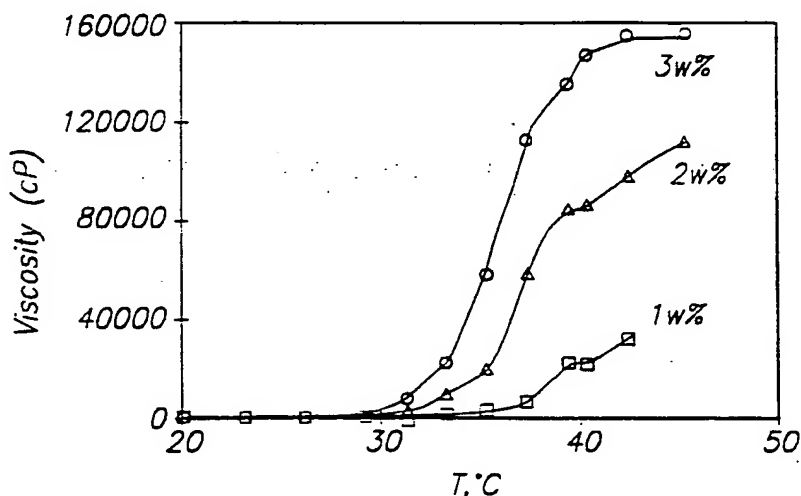
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74</b>		(11) International Publication Number: <b>WO 98/48768</b>
A1		(43) International Publication Date: 5 November 1998 (05.11.98)
(21) International Application Number: PCT/US98/08931		63 Webster Street, Whitman, MA 02382 (US). LUCZAK, Scott [US/US]; 3 Remsen Avenue, Medfield, MA 02052 (US). MENDUM, Thomas, H., E. [US/US]; 45 Columbus Avenue #1, Somerville, MA 02143 (US).
(22) International Filing Date: 1 May 1998 (01.05.98)		
(30) Priority Data: 08/846,883 1 May 1997 (01.05.97) US		(74) Agents: KREBS, Robert, E. et al.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 08/846,883 (CON) Filed on 1 May 1997 (01.05.97)		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).
(71) Applicant (for all designated States except US): MEDLOGIC GLOBAL CORPORATION [US/US]; 4815 List Drive, Colorado Springs, CO 80919 (US).		<b>Published</b> With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.
(72) Inventors; and (75) Inventors/Applicants (for US only): RON, Eyal, S. [US/US]; 7 Coach Road, Lexington, MA 02173 (US). HAND, Barry, J. [US/US]; 145 Butternut Hollow, Acton, MA 01718 (US). BROMBERG, Lev, S. [US/US]; 17 Sherwood Road, Swampscott, MA 01907 (US). KEARNEY, Marie [US/US]; 342 Faneuil Street #1, Brighton, MA 02135 (US). SCHILLER, Matthew, E. [US/US]; 23C Sagamore Way, Waltham, MA 02154 (US). AHEARN, Peter, M. [US/US];		

(54) Title: COMPOSITIONS FOR COSMETIC APPLICATIONS

## (57) Abstract

A cosmetic composition is described having a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.



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## COMPOSITIONS FOR COSMETIC APPLICATIONS

This application is a continuation-in-part application of copending application U.S.S.N. 60/034,805 filed January 2, 1997, and entitled "Responsive Polymer  
5 Networks and Methods of Their Use", which is a continuation-in-part application of copending application PCT/US96/10376 filed June 14, 1996, designating the United States, and entitled "Responsive Polymer Networks and Methods of Their Use", which is a continuation-in-part application of copending application U.S.S.N. 08/580, 986  
10 filed January 3, 1996, and entitled "Responsive Polymer Networks and Methods of Their Use", each of which is incorporated entirely by reference.

### Field of the Invention

The present invention relates to a cosmetic composition useful in a variety of topical and personal care products, including treatments of disorders and imperfections  
15 of the skin or other areas of the body. More particularly, the present invention is directed to a cosmetic composition comprising a poloxamer:poly(acrylic acid) polymer network that can be designed to reversibly gel over a wide range of conditions to provide a composition having a controllable range of viscosities, making it useful in a variety of cosmetic and personal care applications.

20

### Background of the Invention

Many examples are known of cosmetic compositions intended for treatment of the skin or elsewhere on the body, where it is desired to have certain properties of viscosity. Hydrogels, such as cellulose, have been included as thickeners in cosmetic  
25 compositions. A hydrogel is a polymer network which absorbs a large quantity of water without the polymer dissolving in water. The hydrophilic areas of the polymer chain absorb water and form a gel region. The extent of gelation depends upon the volume of the solution which the gel region occupies.

Reversibly gelling solutions are known in which the solution viscosity increases  
30 and decreases with an increase and decrease in temperature, respectively. Such

reversibly gelling systems are useful wherever it is desirable to handle a material in a fluid state, but performance is preferably in a gelled or more viscous state.

A known material with these properties is a thermal setting gel using block copolymer polyols, available commercially as Pluronic® polyols (BASF, Ludwigshafen, Germany), which is described in U.S. Patent No. 4, 188, 373. Adjusting the concentration of the polymer gives the desired liquid-gel transition. However, concentrations of the polyol polymer of at least 18-20% by weight are needed to produce a composition which exhibits such a transition at commercially or physiologically useful temperatures. Also, solutions containing 18-20% by weight of responsive polymer are typically very viscous even in the "liquid" phase, so that these solutions can not function under conditions where low viscosity, free-flowing is required prior to transition. In addition, these polymer concentrations are so high that the material itself may cause unfavorable interactions during use.

Another known system which is liquid at room temperature, but forms a semi-solid when warmed to about body temperature is formed from tetrafunctional block polymers of polyoxyethylene and polyoxypropylene condensed with ethylenediamine, commercially available as Tetronic® polyols. These compositions are formed from approximately 10% to 5% by weight of the polyol in an aqueous medium. See, U.S. Patent No. 5,252,318.

Joshi, et al. in U.S. Patent No. 5,252,318 reports reversible gelling compositions which are made up of a physical blend of a pH-sensitive gelling polymer (such as a cross-linked poly(acrylic acid) and a temperature-sensitive gelling polymer (such as methyl cellulose or block copolymers of poly(ethylene glycol) and poly(propylene glycol)). In compositions including methylcellulose, 5- to 8-fold increases in viscosity are observed upon a simultaneous change in temperature and pH for very low methylcellulose levels (1-4% by weight). See, Figs. 1 and 2 of Joshi, et al. In compositions including Pluronic® and Tetronic® polyols, commercially available forms of poly(ethylene glycol)/poly(propylene glycol) block copolymers, significant increases in viscosity (5- to 8-fold) upon a simultaneous change in temperature and pH are observed only at much higher polymer levels. See, Figs. 3-6 of Joshi, et al.

Hoffman, et al. in WO95/24430 disclose block and graft copolymers comprising a pH-sensitive polymer component and a temperature-sensitive polymer component. The block and graft copolymers are well-ordered and contain regularly repeating units of the pH-sensitive and temperature-sensitive polymer components. The copolymers are described as having a lower critical solution temperature (LCST), at which both solution-to-gel transition and precipitation phase transition occur. Thus, the transition to a gel is accompanied by the clouding and opacification of the solution. Light transmission is reduced, which may be undesirable in many applications, where the aesthetic characteristics of the composition are of some concern.

Thus, the known systems which exhibit reversible gelation are limited in that they require large solids content and/or in that the increase in viscosity is less than 10-fold. In addition, some known systems exhibit an increase in viscosity which is accompanied with the undesirable opacification of the composite.

#### Summary of the Invention

It is an object of the present invention to provide a cosmetic composition which includes a component capable of reversible gelation or viscosification.

It is a further object of the invention to provide a cosmetic composition which includes an ingredient capable of gelation or viscosification at very low solids content.

It is another object of the present invention to provide a cosmetic composition which possesses improved flow and gelation characteristics as compared to properties possessed by conventional reversible gelation compositions.

It is a further object of the invention to provide a polymer network composition for use in cosmetic compositions useful as a surfactant or emulsifier in the solubilization of additives and, in particular, hydrophobic additives.

It is a further object of the invention to provide a cosmetic composition which possesses the appropriate thickness, emolliency and cosmetic effect with a minimum of solids content.

It is a further object of the invention to provide a polymer network for use in cosmetic compositions useful as a suspending agent for otherwise insoluble additives.

It is yet a further object of the present invention to provide a composition capable of solubilizing emulsions at elevated temperatures.

It is yet a further object of the invention to provide new and useful cosmetic compositions incorporating the reversibly gelling polymer network composition of the present invention, which take advantage of its unique advantageous properties.

It is yet another object of the present invention to provide reversibly gelling polymer network compositions which are composed of biocompatible polymers.

These and other objects of the invention are achieved with a cosmetic compositions which incorporates a poloxamer:poly(acrylic acid) polymer network as a cosmetically acceptable carrier. The polymer network comprises a poloxamer component randomly bonded to a poly(acrylic acid), or PAA, component in and aqueous-based medium, the polymer network being capable of aggregating in response to an increase in temperature. The reverse thermal viscosifying poloxamer:poly(acrylic acid) polymer network includes random covalent bonding between the poly(acrylic acid) component and the poloxamer component of the network. The polymer network may also include some unbound or "free" poloxamer or other additives which contribute to or modify the characteristic properties of the polymer composition.

In addition, the cosmetic composition includes a cosmetic agent selected to provide a preselected cosmetic effect. By "cosmetic agent", as that term is used herein, it is meant that the additive imparts a cosmetic effect. A cosmetic effect is distinguishable from a pharmaceutical effect in that a cosmetic effect relates to the promoting bodily attractiveness or masking the physical manifestation of a disorder or disease. In contrast, a pharmaceutical seeks to treat the source or symptom of a disease or physical disorder. It is noted however, that the same additives may have either a cosmetic or pharmaceutical effect, depending upon the amounts used and the manner of administration.

By "cosmetic", as that term is used herein, it is meant the cosmetic and personal-care applications intended to promote bodily attractiveness or to cover or mask the physical manifestations of a disorder or disease. Cosmetics include those products subject to regulation under the FDA cosmetic guidelines, as well as sunscreen products,

acne products, skin protectant products, anti-dandruff products, and deodorant and antiperspirant products.

By "gelation" or viscosification, as that term is used herein, it is meant a drastic increase in the viscosity of the polymer network solution. Gelation is dependent on the initial viscosity of the solution, but typically a viscosity increase in the range of 2- to 100-fold, and preferably 5- to 50-fold, and more preferably 10- to 20-fold is observed in the polymer network which is used in the preparation of the cosmetic compositions of the invention. Such effects are observed in a simple polymer network solution and the effect may be modified by the presence of other components in the cosmetic composition.

By "reversibly gelling" as that term is used herein, it is meant that the process of gelation takes place upon an *increase* in temperature rather than a decrease in temperature. This is counter-intuitive, since it is generally known that solution viscosity *decreases* with an increase in temperature.

As used herein, "poloxamer" is a triblock copolymer derived from poly(ethylene glycol)-poly(propylene glycol)-poly(ethylene glycol) blocks. The poloxamer is capable of responding to a change in temperature by altering its degree of association and/or agglomeration. The aggregation may be in the form of micelle formation, precipitation, labile cross-linking or other factors. The poloxamer has the general formula of a triad ABA block copolymer,  $(P_1)_a(P_2)_b(P_1)_a$  where  $P_1$  = poly(ethylene glycol) and  $P_2$  = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.

The poly(acrylic acid) component includes poly(acrylic acid) and its salts. The poly(acrylic acid) supports and interacts with the poloxamer component so that a multi-material, responsive polymer network is formed. The interaction of the poloxamer and poly(acrylic acid) exhibits a synergistic effect, which magnifies the effect of the poloxamer component in viscosifying and/or gelling the solution.

The novel interaction between the constituent polymers components of the polymer network permits formation of gels at very low solids content. Gelation and/or viscosification is observed in aqueous solutions having about 0.01 to 20 wt% of the

poloxamer component and about 0.01 to 20 wt% of the poly(acrylic acid) component. A typical reversibly gelling polymer network may be comprised of less than about 4 wt% of total polymer solids (e.g., poloxamer and poly(acrylic acid)) and even less than 1 wt% total polymer solids while still exhibiting reverse thermal viscosification. Of course, the total solids content including additives of a reversibly gelling polymer network composition may be much higher. The viscosity of the gel increases at least ten-fold with an increase in temperature of about 5°C at pH 7 and 1 wt% polymer. Viscosity increases may be even greater over a larger temperature range at pH 7 and 1% polymer network content.

10 The relative proportion of poloxamer and poly(acrylic acid) may vary dependent upon the desired properties of the polymer composition. In one embodiment, the poloxamer is present in a range of about 1 to 20 wt% and the poly(acrylic acid) is present in a range of about 99 to 80 wt%. In another embodiment, the poloxamer component is present in a range of about 79 to 60 wt%. In another embodiment, the poloxamer component is present in a range of about 41 to 50 wt%. In another embodiment, the poloxamer component is present in a range of about 51 to 60 wt% and the poly(acrylic acid) component is present in a range of about 49 to 40 wt%. In yet another embodiment, the poloxamer component is present in a range of about 61 to 90 wt% and the poly(acrylic acid) component is present in a range of about 39 to 20 wt%. In another embodiment, the poloxamer component is present in a range of about 81 to 99 wt% and the poly(acrylic acid) component is present in a range of about 10 to 1 wt%.

25 The poloxamer:poly(acrylic acid) polymer network described above is included in a cosmetic composition to improve the flow characteristics, thickness and other properties of the composition. The composition includes additional cosmetic agents, such as are needed for the cosmetic purpose of the composition. Additives also may be included to modify the polymer network performance, such as to increase or decrease the temperature of the liquid-to-gel transition and/or to increase or decrease the viscosity of the responsive polymer composition.

In one aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to impart thickening properties to the cosmetic composition at the use and/or application temperature. Such thickening properties include enhanced overall viscosity, as well as a desirable viscosity response with temperature. The polymer network may be useful as a thickener in pH ranges where other thickeners are not effective.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to stabilize and solubilize hydrophobic agents in the cosmetic composition. The polymer network may be included to increase emulsion stability. Many emulsions, i.e., suspension of small droplets or particles of a first material in a second material, lose viscosity upon heating. As will be demonstrated herein, the poloxamer:poly(acrylic acid) polymer network retains its emulsifying properties even with temperature increase.

In addition, it may be included in the composition to impart emolliency to the composition. The composition may also act as a film-forming agent after it has been applied to the skin. This film-forming agent may be used as a barrier to prevent water loss from the skin which contributes to the moisturization of the skin.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network may be included as an additive in cosmetic applications to prevent viscosity loss at elevated temperatures.

#### Brief Description of the Drawing

The invention is described with reference to the Drawing, which is presented for the purpose of illustration and is in no way intended to be limiting, and in which:

FIG. 1 is a graph of viscosity vs. temperature for a 1 wt%, 2 wt%, and 3 wt% responsive polymer network aqueous composition of a poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of  $0.44 \text{ sec}^{-1}$ ;

FIG. 2 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition demonstrating reversibility of the viscosity response;

FIG. 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates;

FIG. 4 shows a viscosity response curve for a 2 wt% poloxamer:poly(acrylic acid) polymer network composition prepared with nominal mixing and stirring and  
5 prepared using high shear homogenization (8000 rpm, 30 min);

FIG. 5 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition at various pHs;

FIG. 6 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition with and without addition  
10 of 0.25 wt% KCl;

FIG. 7 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition with and without addition of 0.5 wt% acetamide MEA;

FIG. 8 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition without and with 5 wt%, 10  
15 wt% and 20 wt% added ethanol, respectively;

FIG. 9 is an illustration of a reversibly gelling polymer network used as an emulsifier and stabilizer for a hydrophobic agent;

FIG. 10 is a schematic illustration of the poloxamer:poly(acrylic acid) polymer network below and above the transition temperature illustrating the aggregation of the  
20 hydrophobic poloxamer regions;

FIG. 11 is a graph of viscosity vs. pH for a 1 wt% responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid) (1:1) measured at a shear rate of  
0.44 sec<sup>-1</sup>;

FIG. 12 is a plot of viscosity vs. temperature for (a) a 1 wt% responsive polymer network aqueous composition of Pluronic® F127 poloxamer:poly(acrylic acid) (1:1) and (b) a 1 wt% physical blend of Pluronic® F127 poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate 0.22 sec<sup>-1</sup>;  
25



FIG. 13 is a plot of viscosity vs. temperature for a 1 wt% responsive polymer network aqueous composition of Pluronic® F88 poloxamer:poly(acrylic acid) (1:1) in deionized water at pH 7.0 measured at shear rate of 22 sec<sup>-1</sup>;

FIG. 15 is a plot of viscosity vs. temperature for a responsive polymer network composition of 2 wt% Pluronic® F123 poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of 22 sec<sup>-1</sup>;

FIG. 16 is a plot of viscosity vs. temperature for 1 wt% made of series of poloxamers and poly(acrylic acid) (1:1) in deionized water at a shear rate of 132 sec<sup>-1</sup>;

FIG. 17 is a plot showing release of hemoglobin from a poloxamer:poly(acrylic acid) polymer network of the invention;

FIG. 18 is a plot showing the release of lysozyme from the poloxamer:poly(acrylic acid) polymer complex of the invention;

FIG. 19 is a plot showing release of insulin from a poloxamer:poly(acrylic acid) polymer network composition of the invention;

FIG. 20 is a plot of viscosity vs. temperature for a poloxamer:poly(acrylic acid) polymer network composition (a) before and (b) after sterilization by autoclave;

FIG. 21 is a plot of viscosity vs. temperature for an oil-free moisturizing formulation prepared from (a) a responsive polymer network composition of the invention and (b) a convention oil-in-water formulation;

FIG. 22 is a plot of equilibrium solubility of estradiol (A, B) and progesterone (C, D) in aqueous solutions (pH 7) of Pluronic® F127 (A, C) and responsive polymer network (B, D) vs. temperature;

FIG. 23 is a plot of the ratio of equilibrium solubilities of estradiol in responsive polymer network and water vs. polymer concentration in the responsive polymer network solutions;

FIG. 24 is a plot of the effect of loading fluorescein on the onset of gelation of responsive polymer network vs. total polymer concentration in responsive polymer network solution (pH 7.0);

FIG. 25 is a plot of the percentage of (a) estradiol and (b) progesterone release from responsive polymer network vs. time;

FIG. 26 is a plot of the rate of progesterone release and macroscopic viscosity vs. polymer concentration;

FIG. 27 is a plot of the percentage of progesterone release vs. polymer concentration in responsive polymer network; and

5 FIG. 28 is a plot of the relative diffusivity of poly(styrene) latex particles in water and responsive polymer network.

### Detailed Description of the Invention

The present invention is directed to a cosmetic composition comprising a  
10 cosmetically acceptable carrier comprising a novel poloxamer:poly(acrylic acid)  
polymer network. The polymer network functions as a temperature sensitive thickening  
agent, and in addition possesses surfactant and emulsifying capabilities which may be  
beneficial to the cosmetic composition. The polymer network composition according to  
the invention includes a poloxamer component randomly bonded to a poly(acrylic acid)  
15 component. The two polymer component may interact with one another on a molecular  
level. The polymer network contains about 0.01 - 20 wt% each of poloxamer and  
poly(acrylic acid). Exemplary polymer network compositions range from about 1:10 to  
about 10:1 poloxamer:poly(acrylic acid). Polymer network gel compositions which  
exhibit a reversible gelation at body temperature (25-40°C) and/or at physiological pH  
20 (ca. pH 3.0-9.0) and even in basic environment up to pH 13 (hair care) are particularly  
preferred for cosmetic applications.

In one embodiment of the invention, a 1:1 poloxamer:poly(acrylic acid) polymer  
network at appropriate pH exhibits flow properties of a liquid at about room  
temperature, yet rapidly thickens into a gel consistency of at least about five times  
25 greater, preferably at least about 10 times greater, and even more preferably at least  
about 30 times and up to 100 times greater, viscosity upon increase in temperature of  
about 10°C and preferably about 5°C. The reversibly gelling polymer network of the  
present invention exhibit gelation even at very low polymer concentrations. For  
example, polymer network compositions at pH 7 comprising about 0.5 wt% poloxamer  
30 component and about 0.5 wt% PAA exhibits a significant increase in viscosity from a

free-flowing liquid (50 cps) to a gel (6000 cps). The observed gelation takes place at low solids contents, such as less than 20 wt% or preferably less than about 10 wt%, or more preferably less than about 2.5 wt% or most preferably less than about 0.1 wt%. Thus, only a small amount by weight of the polymer network need be incorporated into  
5 a cosmetic composition in order to provide the desired thickening or viscosifying effect.

The reverse viscosification effect at low polymer concentrations provides clear, colorless gels which are particularly well-suited to cosmetic applications. For example, very little residue is formed upon dehydration which may be important in some applications, such as in topically applied cosmetics. An additional advantage of the  
10 polymer network of the invention is that it remains clear and translucent above and below the critical temperature or pH. These characteristics of the reversibly gelling polymer network make it well suited for use in cosmetic compositions.

The polymer network of the present invention technology may be added to cosmetic formulations to increase the thickness and viscosity of the composition. The  
15 poloxamer:poly(acrylic acid) polymer network possesses hydrophobic regions capable of aggregation. Unlike conventional thickeners, the aggregation of the polymer network of the present invention is temperature sensitive. Thus the inventive polymer network of the present invention may have a transition temperature (i.e., temperature of aggregation) above room temperature so that the cosmetic composition is of low  
20 viscosity at or below room temperature and is of high viscosity at or around body temperature (body temperature includes both surface and internal body temperature). Thus, a composition may be prepared at low temperatures while the polymer network is in a low viscosity state. Mixing of ingredients under low viscosity is expected to be easier, thus simplifying the manufacturing process. Yet, the resultant mixture would be  
25 of increased viscosity at use temperatures. As a further advantage, a cosmetic composition comprising poloxamer:poly(acrylic acid) polymer network may be spread thinly to allow for even application, due to its low viscosity at room temperature, but will thicken and "fill" the skin contours upon warming up to body surface temperature.

In another aspect of the invention, the composition may be applied through a  
30 nozzle that provides high shear to reduce viscosity, yet the composition regains its

viscosity after application to the skin. This contrasts with conventional formulations which permanently lose viscosity after being subjected to high shear.

In another aspect of the invention, the composition may be formulated and applied as a liquid, spray, semi-solid gel, cream, ointment, lotion, stick, roll-on  
5 formulation, mousse, pad-applied formulation, and film-forming formulation.

The poloxamer:poly(acrylic acid) polymer network may also be included in a cosmetic composition for use as a stabilizing, solubilizing or emulsifying agent for a hydrophobic component of the cosmetic formulation. The strong hydrophilic regions of the poloxamer resulting from aggregation and micelle formation create hydrophobic  
10 domains which may be used to solubilize and control release of hydrophobic agents. Similar micelle-based systems have been shown to protect trapped peptides against enzymatic degradation from surface enzymes.

The reversibly gelling polymer network of the present invention is a unique polymer composition designed to abruptly change its physical characteristics or the  
15 characteristics and properties of materials mixed therewith with a change in temperature. Without intending to be bound by any particular mechanism or chemical structure, it is believed that the structure of the polymer network involves a random bonding of the poloxamer onto the backbone of the poly(acrylic acid). A portion of the poloxamer which is present during the polymerization reaction which forms the  
20 poly(acrylic acid) is bonded to the backbone of the forming poly(acrylic acid) through hydrogen abstraction and subsequent reaction. See detailed discussion of the mechanism, below. The combination of the poly(acrylic acid) and randomly bonded poloxamer gives the composition its unique properties. Any free poloxamer remaining after polymerization of PAA remains associated with the random co-polymer, resulting  
25 in a miscible composition. Free poloxamer may also be present in the polymer network composition; however, its presence is not required in order to observe reverse thermal viscosification.

The poly(acrylic acid) may be linear, branched and/or cross-linked. Poly(acrylic acid) is capable of ionization with a change in pH of the solution. By  
30 ionization, as that term is used with respect to poly(acrylic acid), it is meant the

formation of the conjugate base of the acrylic acid, namely acrylate. As used herein, poly(acrylic acid) includes both ionized and non-ionized versions of the polymer.

Changes in ionic strength may be accomplished by a change in pH or by a change in salt concentration. The viscosifying effect of the polymer network is partly a function of the ionization of the poly(acrylic acid); however, reverse thermal gelling may occur without ionization. Changes to the ionic state of the polymer causes the polymer to experience attractive (collapsing) or repulsive (expanding) forces. Where there is no need or desire for the composition to be applied in a high viscosity state, it may be possible to prepare the composition as non-ionized poly(acrylic acid). The body's natural buffering ability will adjust the pH of the applied composition to ionize the poly(acrylic acid) and thereby develop its characteristic viscosity.

The poloxamer possesses regions of hydrophobic character, e.g., poly(propylene glycol) blocks, and hydrophilic character, e.g., poly(ethylene glycol) blocks. The poloxamer may be linear or branched. Suitable poloxamers include triad block copolymers of poly(ethylene glycol) and poly(propylene glycol) having the general formula  $(P_1)_a(P_2)_b(P_1)_a$ , where  $P_1$  = poly(ethylene glycol), and  $P_2$  = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70, where poly(propylene glycol) represents the hydrophobic portion of the polymer and poly(ethylene glycol) represents the hydrophilic portion of the polymer. Pluronic® polymers (BASF) are commercially available for (a) in the range of 16 to 48 and (b) ranging from 54-62. One or more poloxamers may be used in the reversibly gelling polymer network composition of the present invention.

The reversibly gelling responsive polymer networks compositions of the present invention are highly stable and do not exhibit any phase separation upon standing or upon repeated cycling between a liquid and a gel state. Samples have stood at room temperature for more than three months without any noticeable decomposition, clouding, phase separation or degradation of gelation properties. This is in direct contrast to polymer blends and aqueous mixed polymer solutions, where phase stability and phase separation is a problem, particularly where the constituent polymers are immiscible in one another.

And example of the dramatic increase in viscosity and of the gelation of the reversibly gelling polymer network compositions of the invention is shown in Figure 1. Figure 1 is a graph of viscosity vs. temperatures for 1 wt%, 2 wt%, and 3 wt% polymer network compositions comprising 1:1 poloxamer:poly(acrylic acid) hydrated and neutralized. The viscosity measurements were taken on a Brookfield viscometer at a shear rate of  $0.44 \text{ sec}^{-1}$  at pH 7.0. All solutions had an initial viscosity of about 1080 cP and exhibited a dramatic increase in viscosity to gel point at about  $35^{\circ}\text{C}$ . This is not typical of all polymer network compositions since polymerization condition will affect initial viscosity. Final viscosities were approximately 33,000 cP, 100,000 cP and 155,000 cP for the 1 wt%, 2 wt% and 3 wt% compositions, respectively. This represents viscosity increases of about 30-, 90- and 140-fold, respectively. This effect is entirely reversible. Upon cooling, the composition regains its initial viscosity. This is demonstrated in Figure 2, where a 1 wt% poloxamer:poly(acrylic acid) composition is warmed through the transition temperature up to  $35^{\circ}\text{C}$  (simple curve), cooled to room temperature ( $24^{\circ}\text{C}$ , ticked curve) and then warmed again up to above the transition temperature (open box curve). The viscosity response was virtually identical in all three instances.

As would be expected with a non-Newtonian system, the solution viscosity differs with different shear rates. Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates. The viscosity response is consistent between  $24^{\circ}\text{C}$  and  $34^{\circ}\text{C}$ ; however, the final viscosity is reduced with increasing shear rate.

However, unlike many prior art hydrogels, e.g., carbomers, the poloxamer:poly(acrylic acid) polymer network composition does not permanently lose viscosity after being subjected to high shear conditions. The poloxamer:poly(acrylic acid) polymer network composition remains unaffected by such shear conditions as homogenization. Figure 4 compares the viscosity response curve of a 2 wt% poloxamer:poly(acrylic acid) polymer composition prepared with nominal mixing (simple line) and stirring with that of a polymer composition of similar composition

prepared using high shear homogenization designated by a ticked line (8000 rpm, 30 min). No significant decrease in viscosity is observed.

A number of factors influence the viscosity and transition temperature of the composition. The more important factors include polymer concentration, pH, and presence and nature of additives.

The effect of pH on the viscosity of reversibly gelling polymer networks is shown in Figure 5. Increasing pH from the starting pH has a lesser effect on the viscosity than decreasing the pH. This may relate to the extent of ionization of the poly(acrylic acid) component of the polymer network as discussed above. This may be clearly seen in Figure 5 when comparing the viscosity response of a 1 wt% poloxamer:poly(acrylic acid) polymer composition at pH 5 and pH 11. Satisfactory viscosities can be obtained at high pHs indicating the potential value of the reversibly gelling polymer network in products such as depilatories, hair straighteners and hair relaxers.

The responsive polymer network may also include additives for influencing the performance of the polymer composition, such as the transition temperature and the viscosity of the polymer composition above the transition temperature. The following list is not intended to be exhaustive but rather illustrative of the broad variety of additives which can be used.

These materials include solvents (e.g., 2-propanol, ethanol, acetone, 1,2-pyrrolidinone, N-methylpyrrolidinone), salts (e.g., calcium chloride, sodium chloride, potassium chloride, sodium or potassium phosphates, borate buffers, sodium citrate), preservatives (benzalkonium chloride, phenoxyethanol, sodium hydroxymethylglycinate, ethylparaben, benzoyl alcohol, methylparaben, propylparaben, butylparaben, Germaben II), humectant/moisturizers (acetamide MEA, lactimide MEA, hydrolyzed collagen, mannitol, panthenol, glycerin), lubricants (hyaluronic acid, mineral oil, PEG-60-lanolin, PPG-12-PEG-50-lanolin, PPG-2 myristyl ether propionate) and surfactants.

Surfactants may be divided into three classes: cationic, anionic, and non-ionics. An example of a cationic surfactant used is ricinoleamidopropyl ethyldimonium

ethosulfate (Lipoquat R). Anionic surfactants include sodium dodecyl sulfate and ether sulfates such as Rhodapex CO-436. Nonionic surfactants include Surfynol CT-111, TG, polyoxyethylene sorbitan fatty acid esters such as Tween 65 and 80, sorbitan fatty acid esters such as Span 65, alkylphenol ethoxylates such as Igepal CO-210 and 430, 5 dimethicone copolyols such as Dow Corning 190, 193, and Silwet L7001.

The addition of polymers has been studied including xanthan gum, cellulose such as hydroxyethylcellulose (HEC), carbomethoxycellulose (CMC), lauryldimonium hydroxypropyl oxyethyl cellulose (Crodacel QL), hydroxypropylcellulose (HPC), and hydroxypropylmethylcellulose (HPMC), poly(acrylic acid), cyclodextrins, methyl 10 acrylamido propyl triammonium chloride (MAPTAC), polyethylene oxide, polyvinylpyrrolidone, polyvinyl alcohol, and propylene oxide/ethylene oxide random copolymers. Poloxamers may also be used as additives. Examples include both the Pluronic® polyols having an  $(P_1)_a(P_2)_b(P_1)_a$  structure such as Pluronic® F38, L44, P65, F68, F88, L92, P103, P104, P105, F108, L122, and F127, as well as the reverse 15 Pluronic® R series  $(P_2)_a(P_1)_b(P_2)_a$  structure such as Pluronic® 17R2 and 25R8. Other miscellaneous materials include propylene glycol, urea, triethanolamine, alkylphenol ethoxylates (Iconol series), and linear alcohol alkoxylates (Plurafac series).

Additives affect the viscosity of the compositions differently depending upon the nature of the additive and its concentration. Some additives will affect the initial or 20 final viscosity, whereas others will affect the temperature range of the viscosity response, or both.

Potassium chloride and acetamide MEA are two examples of additives which decrease the final viscosity of the composition (see Example 30). KCl (0.25%) added to a 1 wt% reversibly gelling polymer composition reduces the viscosity by about 3000 25 cps. See Figure 6. The humectant, acetamide MEA, lowers the viscosity of a 1 wt% solution by approximately 1,500 cps (see Figure 7).

Glycerin, ethanol and dimethicone copolymer have been shown to affect the temperature range over which the viscosity response occurs. Glycerin shifts the transition temperature to a slightly lower range from an initial 24-34°C to about 24- 30 30°C, but does not affect the final viscosity (see Example 44). The effect of ethanol on



the viscosity is different at different concentration levels. At 5 wt% and 10 wt% added ethanol, the transition temperature is shifted to lower ranges, e.g., 24-29°C and 20-29°C, respectively. At 20 wt% added ethanol, the composition not only exhibits a lowering of the transition temperature, but also a marked increase in initial and final viscosity. See Figure 8. Dimethicone copolymer (1 wt%) also changed the transition temperature, but in this instance the transition temperature range was raised to 28-41°C. Thus, proper selection of additives permits the formulator to adjust the transition temperature to various ranges.

Those skilled in the art will appreciate that the polymer network compositions of the present invention may be utilized for a wide variety of cosmetic and personal care applications. To prepare a cosmetic composition, an effective amount of cosmetically active agent(s) which imparts the desirable cosmetic effect is incorporated into the reversibly gelling polymer network composition of the present invention. Preferably the selected agent is water soluble, which will readily lend itself to a homogeneous dispersion through out the reversibly gelling polymer network composition; however, the polymer network has been demonstrated to significantly solubilize or suspend hydrophilic agents in order to improve formulation homogeneity (see Example 36). It is also preferred that the agent(s) is nonreactive with the polymer network composition. For materials which are not water soluble, it is also within the scope of the invention to disperse or suspend powders or oil (lipophilic materials) throughout the polymer network composition. It will also be appreciated that some applications may require a sterile environment. It is contemplated as within the scope of the invention that the reversibly gelling polymer network compositions of the present invention may be prepared under sterile conditions. An additional feature of the reversibly gelling polymer composition is that it is prepared from constituent polymers that have known accepted toxicological profiles.

The poloxamer:poly(acrylic acid) polymer network has been evaluated under Good Laboratory Practice (GLP) standard protocols known in the art for toxicity in animal models and found to exhibit no toxic effects. The results of the toxicity study

are summarized in the following Table 1. The non-toxicity of the polymer network makes it an ideal candidate for use in cosmetic compositions.

Table 1. Toxicity data for 6% poloxamer:poly(acrylic acid) solution at pH 7.

Reaction Tests	Mode of Testing	Results
Skin sensitization	guinea pig - topical	not a sensitizer
Eye irritation	rabbit - eye instillation	negative
Primary dermal irritation	rabbit - topical	very slight edema (1 on a scale of 1-8)
Acute dermal toxicity	rat - single dose (2g/kg)	no toxicity
Acute oral toxicity	rat - single dose (5g/kg)	no toxicity
AMES test		negative

Exemplary cosmetic and personal care applications, for which the reversibly gelling polymer network composition may be used include, but are not limited to, baby products, such as baby shampoos, lotions, powders and creams; bath preparations, such as bath oils, tablets and salts, bubble baths, bath fragrances and bath capsules; eye makeup preparations, such as eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover and mascara; fragrance preparations, such as colognes and toilet waters, powders and sachets; noncoloring hair preparations, such as hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations such as hair dye, hair tints, hair shampoos, hair color sprays, hair lighteners and hair bleaches; makeup preparations such as face powders, foundations, leg and body paints, lipstick, makeup bases, rouges and makeup fixatives; manicuring preparations such as basecoats and undercoats, cuticle softeners, nail creams and lotions, nail extenders, nail polish and enamel, and nail polish and enamel remover; oral hygiene products such as dentrifices and mouthwashes; personal cleanliness, such as bath soaps and detergents, deodorants, douches and feminine hygiene products; shaving preparations such as aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap and preshave lotions; skin care preparations such as cleansing preparations, skin antiseptics, depilatories, face and

neck cleansers, body and hand cleansers, foot powders and sprays, moisturizers, night preparations, paste masks, and skin fresheners; and suntan preparations such as suntan creams, gels and lotions, indoor tanning preparations.

Preparation of the above-named cosmetic compositions and others may be accomplished with reference to any of the cosmetic formulation guidebooks and industry journals which are available in the cosmetic industry. These references supply standard formulations which may be modified by the addition or substitution of the reversible viscosifying polymer network of the present invention into the formulation. Suitable guidebooks include Cosmetics and Toiletries Magazine, Vo. 111 (March, 1996); Formulary: Ideas for Personal Care, Croda, Inc., Parsippany, NJ (1993); and Cosmeticon: Cosmetic Formulary, BASF, which are hereby incorporated in their entirety by reference.

The cosmetic composition may be in any form. Suitable forms include but are not limited to lotions, creams, sticks, roll-on formulations, mousses, aerosol sprays, pad-applied formulations, and film-forming formulations.

As those skilled in the art will appreciate, the foregoing list is exemplary only. Because the reversibly gelling polymer network composition of the present invention is suited for application under a variety of physiological conditions, a wide variety of cosmetically active agents may be incorporated into and administered from the polymer network composition. In addition to the poloxamer:poly(acrylic acid) polymer network, additional cosmetically acceptable carriers may be included in the composition, such as by way of example only, emollients, surfactant, humectants, powders and other solvents. By way of example only, the cosmetic composition also may include additional components, which serve to provide additional aspects of the cosmetic affect or to improve the stability and/or administration of the cosmetic. Such additional components include, but are not limited to, preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, antiperspirants, antiseptics, antistatic agents, astringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents,

conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances. Suitable materials which serve the additive functions listed here are well known in the cosmetic industry. a listing of the additive function and materials suitable for incorporation into the cosmetic composition may be found in Appendix A, which is appended hereto at the end of the specification. Further information may be obtained by reference to The Cosmetic Bench Handbook, Cosmetics & Toiletries, C.C. Urbano, editor, Allured Publ. Corp., 1996, which is hereby incorporated in its entirety by reference.

A brief description of some preferred additives and cosmetically active agents follows. The compositions of the invention include a safe and effective amount of a cosmetically active agent. "Safe and effective", as it is used herein, means an amount high enough to significantly positively modify the condition to be treated or the cosmetic effect to be obtained, but low enough to avoid serious side effects.

Preservative can be desirably incorporated into the cosmetic compositions of the invention to protect against the growth of potentially harmful microorganisms. Suitable preservatives include, but are not limited to, alkyl esters of parahydroxybenzoic acid, hydantoin derivatives, parabens, propionate salts, triclosan tricarbonyl ether, tea tree oil, alcohols, farnesol, farnesol acetate, hexachlorophene and quaternary ammonium salts, such as benzalkonium, and a variety of zinc and aluminum salts. Cosmetic chemists are familiar with appropriate preservatives and may select that which provides the

required product stability. Preservatives are preferably employed in amounts ranging from about 0.0001 % to 2 % by weight of the composition.

Emollients can be desirably incorporated into the cosmetic compositions of the invention to provide lubricity to the formulation. Suitable emollients may be in the form of volatile and nonvolatile silicone oil, highly branched hydrocarbons and synthetic esters. Amounts of emollients may be in the range of about 0.1-30 wt%, and preferably about 1-20 wt%. By way of example only, suitable silicones include cyclic or linear polydimethylsiloxanes, polyalkylsiloxanes, polyalkylarylsiloxanes and polyether siloxanes. By way of example only, suitable ester emollients include alkenyl esters of fatty acids, polyhydric alcohols, such as ethylene glycol mono and di-fatty acid esters, polyethylene glycol and the like, ether-esters, such as fatty acid esters of ethoxylated fatty alcohols, wax esters, such as beeswax, spermaceti, myristyl myristate and stearyl stearate, and sterol esters such as cholesterol fatty acids.

A variety of oily emollients may be employed in the compositions of this invention. These emollients may be selected from one or more of the following classes:

1. Triglyceride esters such as vegetable and animal fats and oils. Examples include castor oil, cocoa butter, safflower oil, cottonseed oil, corn oil, olive oil, cod liver oil, almond oil, avocado oil, palm oil, sesame oil, squalene, Kikui oil and soybean oil;
2. Acetoglyceride esters, such as acetylated monoglycerides;
3. Ethoxylated glycerides, such as ethoxylated glyceryl monostearate;
4. alkyl esters of fatty acids having 10 to 20 carbon atoms, such as, methyl, isopropyl, and butyl esters of fatty acids, and including hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate, decyl stearate, isopropyl isostearate, diisopropyl adipate, diisohexyl adipate, dihexyldecyl adipate, diisopropyl sebacate, lauryl lactate, myristyl lactate, and cetyl lactate;
5. Alkenyl esters of fatty acids having 10 to 20 carbon atoms, such as oleyl myristate, oleyl stearate, and oleyl oleate and the like;
6. Fatty acids having 10 to 20 carbon atoms, such as pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic, oleic, linoleic, ricinoleic, arachidic, behenic, and erucic acids and the like;
7. Fatty alcohols having 10 to 20 carbon atoms, such as, lauryl, myristyl, cetyl, hexadecyl, stearyl, isostearyl, hydroxystearyl, oleyl,

- ricinoleyl, behenyl, erucyl, and 2-octyl dodecanyl alcohols are examples of satisfactory fatty alcohols and the like; 8. Fatty alcohol ethers, such as ethoxylated fatty alcohols of 10 to 20 carbon atoms including the lauryl, cetyl, stearyl, isostearyl, oleyl, and cholesterol alcohols, having attached thereto from 1 to 50 propylene oxide groups; 9.
- 5 Ether-esters such as fatty acid esters of ethoxylated fatty alcohols; 10. lanolin and derivative, such as lanolin, lanolin oil, lanolin wax, lanolin alcohols, lanolin fatty acids, isopropyl lanolate, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylated cholesterol, propoxylated lanolin alcohols, acetylated lanolin alcohols, lanolin alcohols linoleate, lanolin alcohols ricinoleate, acetate of lanolin alcohols ricinoleate, acetate of
- 10 ethoxylated alcohols-esters, hydrogenolysis of lanolin, ethoxylated hydrogenated lanolin, ethoxylated sorbitol lanolin, and liquid and semisolid lanolin absorption bases and the like; 11. Polyhydric alcohol esters, such as, ethylene glycol mono and di-fatty acid esters, diethylene glycol mono- and di-fatty acid esters, polyethylene glycol (200-6000) mono- and di-fatty acid ester, propylene glycol mono- and di-fatty acid esters,
- 15 polypropylene glycol 2000 monooleate, polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters, polyglycerol polyfatty esters, ethoxylated glyceryl monostearate, 1,2-butylene glycol monostearate, 1,2-butylene glycol distearate, polyoxyethylene polyol fatty acid ester, sorbitan fatty acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory
- 20 polyhydric alcohol esters; 12. Waxes such as beeswax, spermaceti, myristyl myristate, stearyl stearate; 13. Beeswax derivatives, e.g., polyoxyethylene sorbitol beeswax; 14. Vegetable waxes including carnauba and candelilla waxes; 15. Phospholipids such as lecithin and derivatives; 16. Sterol including cholesterol and cholesterol fatty acid esters; 17. Amides such as fatty acid amides, ethoxylated fatty
- 25 acid amides, solid fatty acid alkanolamides.

Humectants may be added to the composition to increase the effectiveness of the emollient, to reduce scaling, to stimulate removal of built-up scale and improve skin feel. by way of example only, suitable humectants include polyhydric alcohols, such as glycerol, polyalkylene glycols, alkylene polyols, their derivatives, propylene glycol,

30 dipropylene glycol, polypropylene glycol, polyethylene glycol, sorbitol, hydroxypropyl

sorbitol, hexylene glycol, 1,3-butylene glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and the like. The amount of humectant may be in the range of about 0.5-30 wt% and preferably between 1-15 wt%.

In topical skin care applications, a variety of active substances may be advantageously employed. by way of example, only suitable active agents which may be incorporated into the cosmetic composition include anti-aging active substances, anti-wrinkle active substances, hydrating or moisturizing or slimming active substances, depigmenting active substances, substances active against free radicals, anti-irritation active substances, sun protective active substances, anti-acne active substances, firming-up active substances, exfoliating active substances, emollient active substances, and active substances for the treating of skin disorders such as dermatitis and the like.

By way of example only, in the case of hydration, one or more moisturizers may be used, such as glycerin or urea, in combination with one or more precursor agents for the biosynthesis of structural proteins, such as hydroxyproline, collagen peptides, and the like.

By the way of example only, in case of slimming, at least one ketolytic agent or an alpha-hydroxyacid such as a salicylic acid or 5-n-octanoicsalicylic acid may be used in combination with at least one liporegulating agent such as caffeine.

By way of example only, in the case of depigmentation, at least one keratolytic agent is used in combination with a depigmenting agent such as hydroquinone, tyrosinase inhibitor (kolic acid), kojic acid and sodium metabisulfite and the like.

By way of example only, in the case of protection against free radical agents, vitamin E (against  $\text{CO}_2$  radicals), superoxide dismutase (against  $\text{O}_2$  free radicals) and sugar and caffeine (against OH free radicals).

By way of example only, in the case of anti-aging, moisturizers, sunscreens, alpha-hydroxyacids, salicylic acid or surface restructuring agents may be used in combination with enzymes for the repair of DNA, vascular protective agents or phospholipids rich in oligoelements and polyunsaturated fatty acids.

By way of example only, in the case of anti-acne agents, keratolytics, such as salicylic acid, sulfur, lactic acid, glycolic, pyruvic acid, urea, resorcinol and N-acetylcysteine, and retinoids, such as retinoic acid and its derivatives may be used.

By way of example only, in the case of anti-inflammation, non-steroidal anti-inflammatory agents (NSAIDS) may be used, such as propionic acid derivatives, acetic acid, fenamic acid derivatives, biphenylcarboxylic acid derivatives, oxicams, including but not limited to aspirin, acetaminophen, ibuprofen, naproxen, benoxaprofen, flurbiprofen, fenbufen, ketoprofen, indoprofen, piroprofen, carprofen, and bucloxic acid and the like.

By way of example only, in the case of antibiotic and antimicrobials may be included in the composition of the invention. Antimicrobial drugs preferred for inclusion in compositions of the present invention include salts of  $\beta$ -lactam drugs, quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methanamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole and amanfadine and the like.

By way of example only, in the case of sunscreen protection, suitable agents include 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenyl p-methoxycinnamate, 2-ethylhexyl octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-i-butyldibenzoylmethen, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-methylbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof and the like. The sunscreens disclosed therein have, in a single molecule, two distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range. These sunscreens provide higher efficacy, broader UV absorption, lower skin penetration and longer lasting efficacy relative to conventional sunscreens. Generally,



the sunscreens can comprise from about 0.5% to about 20% of the compositions useful herein. Exact amounts will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF). SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

5 By way of example only, in the case of sunless tanning agents include, dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like.

The composition may include cleansing surfactants. Cleansing surfactants are cationic, anionic, amphoteric or non-ionic surfactants which are water-soluble and produce a consumer-acceptable amount of foam. Non-ionic surfactants are well-known  
10 materials and have been used in cleansing compositions. Therefore, suitable non-ionic surfactants include, but are not limited to, compounds in the classes known as alkanolamides, block copolymers of ethylene and propylene, ethoxylated alcohols, ethoxylated alkylphenols, alkyl polyglycosides and mixtures thereof. In particular, the non-ionic surfactant can be an ethoxylated alkylphenol, i.e., a condensation product of  
15 an alkylphenol having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to at least about 8 moles ethylene oxide per mole of alkylphenol. Examples of compounds of this type include  
nonylphenol condensed with about 9.5 moles of ethylene oxide per mole of phenol;  
20 dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol;  
dinonylphenol condensed with about 15 moles of ethylene oxide per mole of phenol;  
octylphenol condensed with about ten moles of ethylene oxide per mole of phenol; and  
diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of phenol.

A wide variety of acids, bases, buffers, and sequestrants can be utilized to adjust  
25 and/or maintain the pH and ionic strength of the compositions useful in the instant invention. Materials useful for adjusting and/or maintaining the pH and/or the ionic strength include sodium carbonate, sodium hydroxide, hydrochloric acid, phosphoric acid, sulfuric acid, acetic acid, sodium acetate, sodium hydrogen phosphate, sodium dihydrogen phosphate, citric acid, sodium citrate, sodium bicarbonate, triethanolamine,  
30 EDTA, disodium EDTA, tetrasodium EDTA, and the like.

The polymer network may be useful as a solubilization agent in cosmetic and personal care applications. A self-assembling system comprising the reversibly gelling polymer network exhibits thermogelation, pH sensitivity, and the ability to solubilize hydrophobic agents in aqueous media. When poloxamer is copolymerized with  
5 poly(acrylic acid) (PAA) according to the invention, the resulting copolymer network is bioadhesive and can be applied in a number of therapies. The materials described in this invention combine "reverse" thermoviscosification mucoadhesion, solubilization of hydrophobic and difficult to manage moieties, easy formulation, and protection of agents from degradation to provide a superior medium for cosmetic and personal care  
10 products.

The reversible viscousification of the polymer network at elevated temperatures makes the materials idea for use as thickening agents in cosmetic and personal care products at any temperature above the transition. Another use of the "thickening" of solutions containing the polymer network as a thickener supplement in emulsions.  
15 Currently, emulsifiers are often negatively affected by increased temperatures. An additive with reverse thermal viscousification properties, however, would react in exactly the opposite way, increasing its ability to emulsify as it gained three-dimensional structure upon heating above its transition temperature.

In the applications where the reversibly gelling polymer composition can act as  
20 a surfactant, the polymer network will have the ability to act as a primary emulsifier without any (or with very little) addition of traditional surfactant. The responsive polymer network will also act as a stabilizer for oil soluble ingredients that would conventionally need to be solubilized by oils in formulation. The hydrophobic portion of the polymer network (PPO) forms domains which act as reservoirs for an oil-soluble  
25 or hydrophobic additive, such as an oil droplet, as is illustrated in Figure 9. These two features of the material of the invention would enable it to be used as a base in a cosmetic formulation that would be non-greasy due to lack of oils, such as petrolatum and mineral oil. The increase in viscosity above the transition temperature adds structure and yield value to the water phase and results in a highly stable emulsion.

Thus, poloxamer:poly(acrylic acid) polymer network compositions are valuable materials in the formulation of cosmetic and personal care products. In particular, they may be useful as rheology modifiers, provide a cushioning effect on the skin, offer barrier properties and controlled release of actives. In addition, the polymer composition may serve as a surfactant and is compatible with most ingredients used in the cosmetic industry.

The above properties of the poloxamer:poly(acrylic acid) polymer network provides a cosmetic composition that spreads evenly and smoothly and which leaves a lubricious feel to the skin. A sensory evaluation was conducted with seven random volunteers in order to determine the sensory effect of a cream formulation on the skin. An oil-free cosmetic formulation was prepared substantially as set forth in Example 33(b) and was compared to Nivea Oil Free, a product of Beiersdorf of Germany. Volunteers placed unmarked samples on the skin and evaluated the formulation based upon its feel and texture. The samples were rated on a scale of 1 (bad) to 5 (good). The oil-free cosmetic formulation of the present invention scored equally to the Nivea Oil Free moisturizing product. Both samples scored a 3.5 on the rating scale.

The observed thermal behavior of the reversibly gelling polymer network suggests that the increase in viscosity is due to aggregation of the hydrophobic portion of the poloxamer at the transition temperature which, because of bonding with the poly(acrylic acid) component, serve as temporary cross-links which physically bridge adjacent chains of poly(acrylic acid) to provide a viscous gel-like extended polymer structure. The aggregation process may be understood as occurring as shown in Figure 10, in which a backbone 20 represent poly(acrylic acid), a thin band 24 represents the hydrophobic poly(propylene) glycol region of the poloxamer and a thick band 26 represents the hydrophilic poly(ethylene glycol) region of the poloxamer. Below the transition temperature, the polymer network is randomly arranged, as is shown in Figure 10(a). At or above the transition temperature, the hydrophobic regions 24 associate to form aggregations or micelles 28, as is shown in Figure 10(b). The association increases the effective molecular weight of the polymer network composition with the corresponding increase in viscosity.

A general method of making the poloxamer:PAA polymer network compositions of the present invention comprises solubilization of the poloxamer in acrylic acid monomer, followed by polymerization of the monomer to PAA. Polymerization may be accomplished by addition of a polymerization initiator or by irradiation techniques.

5 The initiator may be a free radical initiator, such as chemical free radical initiators and UV or gamma radiation initiators. Conventional free radical initiators may be used according to the invention, including, but in no way limited to ammonium persulfate, benzoin ethyl ether, benzyl peroxide, 1, 2'-azobis(2,4-dimethylpentanitrile) (Vazo 52) and azobisisobutyronitrile (AIBN). Initiation may also be accomplished using cationic

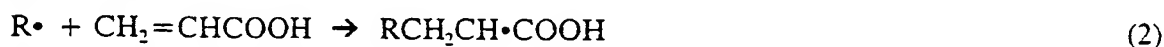
10 or ionic initiators. many variations of this method will be apparent to one skilled in the art and are contemplated as within the scope of the invention. For example, the poloxamer component may be dissolved in an acrylic acid/water mixture instead of pure monomer. It may be desirable to remove unreacted monomer and/or free poloxamer from the resultant polymer network. This may be accomplished using conventional

15 techniques, such as, by way of example, dialysis or Soxhlet extraction.

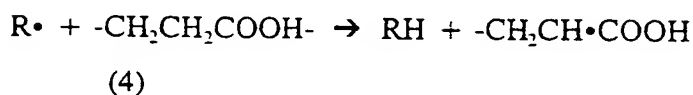
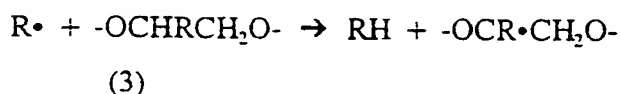
Without intending to be bound by a particular mechanism or structure, the following scheme represents a possible chemical mechanism for the formulation of the system here described. These mechanisms are presented by way of explanation and are in no way limiting of the invention. It is contemplated that these or other mechanistic

20 routes may in fact occur in the formation of the polymer network of the present invention.

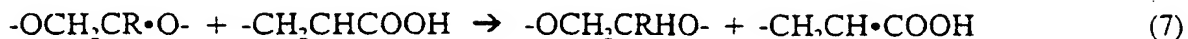
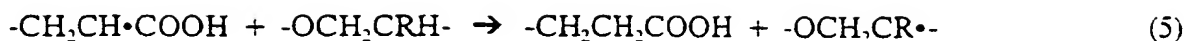
#### I. Initiation



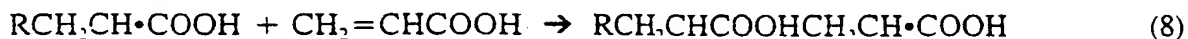
#### 25 II. Hydrogen Abstraction



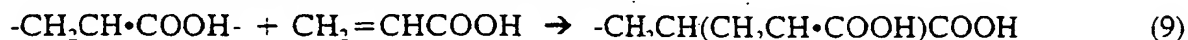
#### 30 III. Chain Transfer



#### IV. Propagation



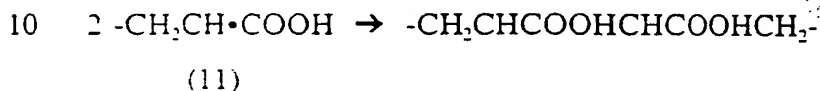
#### 5 V. Side Chain Branching Off AA Backbone



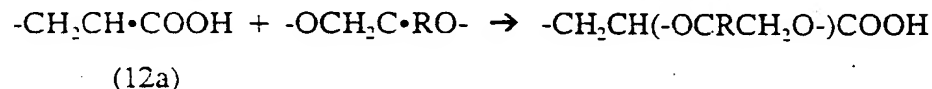
#### VI. AA Branching Off Poloxamer Backbone



#### VII. Homogenous Termination



#### VIII. Heterogenous Termination with Bonding of Pluronic to PAA



15

The scheme for bonding of poloxamer to acrylic acid may involve initiation (Eq. 1), hydrogen abstraction from the propylene or ethylene moiety of the poloxamer (Eq. 3), and attachment to acrylic acid via addition across the unsaturated bond (Eq. 10). Propagation (Eq. 8) leads to the final PAA.

20

Alternatively, the mechanism may proceed by initiation according to Eqs. (1) and (2), propagation to form PAA (Eq. 8), a chain transfer reaction to generate a reactive poloxamer moiety (Eq. 5), followed by addition of the reactive poloxamer moiety to the unsaturated bond of acrylic acid (Eq. 10) and subsequent propagation of the PAA chain.

25

Thus, the polymer network may include a plurality of poly(acrylic acid) units bounded to a single poloxamer unit, or alternatively, a plurality of poloxamer units bound to a single PAA backbone. Combinations of these alternatives are also a possibility.

30

Reverse phase polymerization may be used to prepare polymer network beads by dispersion of the poloxamer and acrylic acid monomer mixture in a nonpolar solvent

such as hexane or heptane. The aggregating polymer/monomer solution is dispersed with agitation in the nonpolar solvent in order to suspend droplets of the solution. Polymerization of the monomer is initiated by conventional means (i.e., addition of an initiator or irradiation) in order to polymerize the monomer and form responsive  
5 polymer network beads. See U.S.S.N. 08/276,532 filed July 18, 1995 and entitled "Useful Responsive Polymer Gel Beads" for further information on the preparation of polymer gel beads, herein incorporated by reference. Such a method may be particularly desirable to provide a heat sink for the heat generated in the exothermic polymerization reaction.

10 The polymer network complexes and aqueous gelling solutions of the present invention may be understood with reference to the following examples, which are provided for the purposes of illustration and which are in no way limiting of the invention.

Example 1. This example describes the synthesis of a polymer network and an  
15 aqueous responsive polymer network solution prepared using a triblock polymer of poly(ethylene glycol) and poly(propylene glycol), Pluronic® F27 polyol, and poly(acrylic acid). This example also characterizes the gelation and the physical properties of the resultant polymer network.

Synthesis. Block copolymer of poly(propylene glycol) (PPG) and poly(ethylene glycol) (PEG) having triad ABA structure  $(\text{PEG})_A(\text{PPG})_B(\text{PEG})_A$  (Pluronic® F127 NF polyol, Poloxamer 407 NF polyol, where "F" means Flakes, "12" means  $12 \times 300 = 3600$  - MW of the PPG section of the block copolymer, "7" PEG in the copolymer is 70 wt%, and nominal molecular weight is 12,600) from BASF (3.0 g) was dissolved in 3.0 g acrylic acid (Aldrich). This represents a substantially 1:1 weight ratio of Pluronic®  
25 F127 polyol and poly(acrylic acid). The solution was deaerated by  $\text{N}_2$  bubbling for 0.5 h and following addition of 100 ml of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer.

Viscosity measurements. A known amount of the resultant polymer was  
30 suspended in 100 ml deionized water into which NaOH was added. Following swelling

for 3 days while stirring, the pH of the resulting fine suspension was adjusted to 7. Samples of 15 ml each were taken, and pH in each vial was adjusted to desired value by addition of 1 M HCl or NaOH. Samples were then kept overnight and their viscosities were measured at different temperatures using Brookfield viscometer using either an  
5 SC4-18 or an SC4-25 spindle.

A control experiment was done with a physical blend of Pluronic® F127 polyol and poly(acrylic acid) (MW 450,000) available from Aldrich. Pluronic® F127 polyol and poly(acrylic acid) were dissolved together in deionized water at 1 wt% total polymer concentration and the resultant solution was adjusted to pH 7, stirred and kept  
10 in refrigerator. The responsiveness of the polymer network composition and the physical blend to temperature and pH is illustrated in figs. 1, 11, and 12. Figs. 1 and 2 clearly demonstrate that the synthetic route outlined above resulted in a polymer network system that is sensitive to pH and temperature of the environment. Note that the liquid-gel transition is very sharp, occurring over a very small temperature change  
15 of pH (see Figure 11). Figure 12 is a viscosity vs. temperature graph comparing the gelling characteristics of the responsive polymer network composition and the physical blend. The blend prepared by physically mixing the triblock PEG/PPG/PEG polymer and poly(acrylic acid) did not exhibit viscosifying effect either as a function of temperature or pH.

20 It was generally observed that 0.5 - 5 wt% polymer network compositions made of Pluronic® F127 polyol and poly(acrylic acid) viscosify at temperatures of around 30°C and higher if pH is adjusted to 6 or higher. The gelling effect was observed in polymer network compositions standing 3 months or longer. Repeated heating and cooling of responsive polymer network compositions did not cause deterioration of the  
25 polymer network or the gelling effect. Solutions of either Pluronic® F127 polyol or poly(acrylic acid) (1-5 wt% in water, adjusted to pH 6 or higher) or physical blends of the two lacked the reverse thermal gelling effects found for polymer network compositions.

Example 2. this example describes a standard operating procedure for the  
30 manufacture of the reversible gelling polymer network.

The procedure is based upon a 50 liter production. A NaOH solution was prepared by dissolving 131.8 g NaOH pellets in 131.8 mL DI water (50% solution). The NaOH was allowed to dissolve completely. The NaOH solution will be used to convert a percentage of the acrylic acid to sodium acrylate in situ. Acrylic acid monomer (4 kg) is charged into a monomer feed tank and agitated at 250 rpm. NaOH is added slowly. The precipitate formed as the acrylic acid is neutralized to sodium acrylate is allowed to dissolve. Pluronic® F 127 (3.5 kg) is slowly added to the monomer feed tank. Pluronic® F127 is dissolved under continued agitation. Norpar 12 (a refined C-12 alkane) is added to the reaction vessel (37 L). The mixture is agitated at 100 rpm. Stabilizer solution of Ganex V-126 is prepared in 2L Norpar 12 and added to the reactor under agitation.

A reaction vessel was degassed using a nitrogen sparge introduced from the bottom of reactor and was continued throughout the reaction. Initiator (13.63 g Lauryl peroxide and 4.23 g Vazo 52 in 0.7 kg acrylic acid monomer) is introduced into the monomer solution. the monomer solution was transferred to the reaction vessel. Agitation was increased to 150 rpm. Nitrogen sparging continued for an additional 20 minutes, and then heating began. heating began at a rate of 0.5 -1.0°C/min up to 75°C. The reaction began to exotherm at about 45-50°C and is allowed to continue without cooling until a maximum is reached. It is then cooled to 75°C using forced cooling. The reaction continued for 12 hours and was then cooled to 35°C. The slurry was transferred into pails and the polymer beads were allowed to settle.

The slurry was filtered through Buchner Funnels with filter paper (11 µm pore size) until the bulk of the Norpar had been removed from the beads. The beads were washed three times with heptane. The filtered beads were transferred to a Pyrex drying tray and spread on the tray in a uniform layer. The beads were dried under vacuum for 4 hours at 40-50°C. The dried beads were analyzed as follows.

Elemental analysis. The elemental analysis was performed by Quantitative Technologies, Inc., Whitehouse, NJ using a Perkin Elmer 2400 CHN Elemental Analyzer. Analysis provided C (52.49%), H (7.50%), N (<0.05%), the balance assumed to be oxygen (39.96%).



Thermal Gravimetric Analysis (TGA). The TGA method was performed by Massachusetts Material Research, Inc., West Boylston, MA using a Dupont TGA model 295. The assay was run using a temperature ramp from 30 to 500°C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The data was analyzed using the first derivative of the curve and using maxima and minima to mark transitions. The moisture content was also calculated in this manner. The first derivative yielded three maxima. The first transition (moisture) was 3.0% by weight, the second transition was 14.0% by weight, and the third was 67.02% by weight. Residue (15.98%) remained.

Molecular weight determination by gel permeation chromatography (GPC). The molecular weight was determined by GPC on a Hewlet Packard 1100 Liquid Chromatography system with a Viscotech T60 Triple Detector system. Three Waters Ultrahydrogel columns, 1000, 500 and 250 Å, were used for the separation. The mobile phase was 0.1 M NaNO<sub>3</sub> and 0.01 M K<sub>2</sub>HPO<sub>4</sub> salt solution, pH adjusted with phosphoric acid to a pH of 8.0 ± 0.1. the flow rate for the separation was 0.9 mL/min. The column temperature was maintained at 15°C. The injection volume for the assay was 50 µL. A PEG molecular weight standard of 23,000 Daltons was used to align the detectors. The result for the assay were:

M<sub>n</sub>: 341,700 Daltons

M<sub>p</sub>: 1,607,000 Daltons

M<sub>w</sub>: 2,996,000 Daltons

Free poloxamer determination by GPC. The amount of free (unbound) poloxamer in the polymer matrix was determined using the above GPC method and comparing the poloxamer peaks to that of a standard poloxamer solution. The typical result is approximately 18-22% free poloxamer by weight.

The effect of both the bonded and non-bonded poloxamer on the gelation properties of the responsive polymer network has been determined by extraction of the non-bonded poloxamer from the material. Such extraction studies have established that the graft co-polymer alone exhibits the characteristic reverse thermal gelation of the composition; however, the presence of non-bonded poloxamer component modulates

the gelation process. The non-bonded poloxamer component can affect the temperature of transition (from liquid to gel) and the degree of transition and assists in a more controlled and reproducible transition.

Bound poloxamer determination by ethylene oxide (EO) titration. The EO  
5 titration was performed as follows. A 5 gm sample of the product polymer was extracted in dichloroethane for three hours at reflux temperatures. The solid is removed and dried under a vacuum for 12 hours at room temperature. The dry material is then analyzed using ASTM method D 2959-95, "Standard Test Method for Ethylene Oxide Content". The amount of EO in the sample is related to the amount of poloxamer  
10 bound to the polymer. The typical result is approximately 15% by weight of EO.

The relative amount of free poloxamer may be varied dependent upon the relative proportions of starting materials and the method of polymerization. Although the residual solids presumably contain only poloxamer which is bounded to the poly(acrylic acid), i.e., a graft co-polymer, the material still shows strong  
15 viscosification when it is neutralized and dissolved in water. However, the temperature of viscosification is increased substantially and the degree of viscosification per gram of total solids is increased by removal of free poloxamer. Thus, the free poloxamer plays a role in modifying the extent and temperature of viscosification. The poloxamer undergoes conformational changes and changes to the critical micelle concentration as a  
20 function of temperature. The poloxamer will change from an open, non-aggregated form to a micellular, aggregated form with changes in temperature.

Residual acrylic monomer determination by gas chromatography (GC). The residual acrylic acid monomer was determined by GC analysis using a Hewlet Packard GC 5890A, using a HP-FFDAP-TPA 10 m x 0.52 mm x 1  $\mu$ m column. The sample  
25 was extracted and run in methanol. Using an internal standard ratio, the sample was compared to a one point calibration. The typical results for this assay were below 70 ppm acrylic acid monomer.

Residual Norpar solvent by GC. The residual Norpar in the sample was determined by GC using the above method and comparing the Norpar peaks to that of a  
30 standard. The typical results were below 1.5 wt%.

UV-vis spectrum. Optical clarity data of UV-vis spectrophotometer was obtained. A 1.0% solution in water was prepared and measured at 420 nm. Transmittance (%) was typically greater than 90%.

Differential scanning calorimetry (DSC). The DSC was performed by Massachusetts Material Research, Inc., West Boylston, MA using a temperature ramp from 30 to 350°C at 5°C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The assay yielded one endothermic event at 265°C, typically 270 J/g.

Examples 3-9. These examples describe the synthesis of several reversible thermal gelling polymer networks prepared using a variety of poloxamers and poly(acrylic acid). The gelation and the physical properties of the resultant polymer network compositions are reported in Table 2.

Table 2

Example	Poloxamer	Poloxamer Composition	Poloxamer: PAA	Trans. Temp.	Comments
3	Pluronic® F88 Prill polyol	2400 MW PPG; 80 wt% PEG; nominal MW 11,400	1:1	48°C	viscosity response curve shown in Figure 13
4	Pluronic® F127 NF polyol	3600 MW PPG; 70 wt% PEG; nominal MW 12,600	1:1	30°C	pentaerythritol triallyl ether crosslink agent used
5	Pluronic® P104 polyol	3000 MW PPG; 40 wt% PEG; nominal MW 5,900	1:1	28°C	viscosity response curve shown in Figure 14
6	Pluronic® P123 polyol	3600 MW PPG; 30 wt% PEG; nominal MW 5,750	1:1	25°C	viscosity response curve shown in Figure 15
7	Pluronic® F127/ Pluronic® F108 polyol blend (1:1)	as above	1:1.7	42°C	polymer solid formed, dried; resolubilized in neutralizing solution
8	Pluronic® F88 polyol	as above	1:1.7	80°C	polymer solid formed, dried; resolubilizing in neutralizing solution

9	Pluronic® F127/ Pluronic® F88 polyol blend (1:1)	as above	1:1.7	85°C	polymer solid formed, dried; resolubilizing in neutralizing solution
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Example 10. The following example demonstrates the effect of hydrophilic/hydrophobic ratio on the gelling temperature. Polymer network compositions were prepared from the following poloxamers shown in Table 3.

**Table 3. Composition of Poloxamers Investigated.**

triblock polyol polymer composition	MW of PPG block	wt% of PEG block
P103 (PEG) <sub>37</sub> (PPG) <sub>56</sub> (PEG) <sub>37</sub>	3250	50
P104 (PEG) <sub>25</sub> (PPG) <sub>56</sub> (PEG) <sub>25</sub>	3250	40
P105 (PEG) <sub>16</sub> (PPG) <sub>56</sub> (PEG) <sub>16</sub>	3250	30

Table 3 shows that in this series, the fraction of PEG is reduced when the molecular weight of the PPG block is kept constant. Linse (*Macromol.* 26:4437-4449 (1993)) report phase diagrams for these copolymers in water were calculated and it was shown that two-phase boundaries corresponding to the beginning of aggregation are almost unaffected by the molecular mass, given a constant PEG/PPG ratio, whereas these boundaries shifted to lower temperature as the PEG content of the polymer is reduced at constant mass. The strong dependence of the PEG/PPG ratio is a consequence of the differing solubilities of PEG and PPG in water at the elevated temperatures. Thus, one would suppose that aggregation that causes viscosification in the responsive polymer network composition should shift to lower temperature as PEG fraction decreases.

The poloxamer (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 20 min. and following addition of the 100:1 of freshly prepared saturated solution of ammonium persulfate in deionized water was kept at 70°C for 16 h resulting in a strong whitish polymer. A sample of the polymer obtained

(0.4 g) was suspended in 40 ml deionized water into which NaOH was added.

Suspended responsive polymer network particles were allowed to dissolve under constant stirring. The resulting 1 wt% polymer network solution were subjected to the viscosity measurement at shear rate of 132 or 13.2 sec<sup>-1</sup> using a SC4-18 spindle. It can be seen from Figure 16 that, firstly, viscosity of the 1 wt% responsive polymer network solutions before viscosification (at 20-24°C) decreases in the series

(PEG)<sub>37</sub>(PPG)<sub>56</sub>(PEG)<sub>37</sub>(F103) > (PEG)<sub>25</sub>(PPG)<sub>56</sub>(PEG)<sub>25</sub>(F104) >

(PEG)<sub>16</sub>(PPG)<sub>56</sub>(PEG)<sub>16</sub>(F105) and, secondly, the temperature at which gelation shifts from about 45°C for (PEG)<sub>37</sub>(PPG)<sub>56</sub>(PEG)<sub>37</sub> to about 35°C for (PEG)<sub>25</sub>(PPG)<sub>56</sub>(PEG)<sub>25</sub>

and (PEG)<sub>16</sub>(PPG)<sub>56</sub>(PEG)<sub>16</sub>. Both results are in excellent agreement with the theory set forth in Linse.

Example 11. The following example is related to release of and active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein hemoglobin from poloxamer:poly(acrylic acid) polymer network is described.

Synthesis. Pluronic® F127 (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 0.5 h and following addition of 100 Fl of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer. The resultant responsive polymer network obtained (5 g) was suspended in 95 ml deionized water into which NaOH was added. The resulting suspension was allowed to swell for 7 days.

Hemoglobin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 0.25 mg/ml solution of human hemoglobin (Sigma) in deionized water adjusted to pH 8. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the hemoglobin-loaded responsive polymer network and 6 ml of phosphate-buffered saline

(pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 0.25 mg/ml hemoglobin solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples of the receiver phase was withdrawn from time to time and their absorbance was measured spectrophotometrically at 400 nm. To  
5 calculate hemoglobin concentrations, corresponding calibration curves (absorbance in PBS versus hemoglobin concentration) were generated. The results of the kinetic experiment are presented in Figure 17. It can be seen that the rate of hemoglobin release from the polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in the polymer network at elevated  
10 temperatures (see Figure 1). The protein released from the polymer network composition still retained its native structure, as was determined by comparison of UV-vis spectra of release hemoglobin and natural hemoglobin.

Example 12. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of  
15 release of the protein lysozyme from a polymer network is reported.

Lysozyme loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 1 mg/ml solution of chicken egg-white lysozyme (Sigma) and 1.5 mg/ml sodium dodecyl sulfate (Aldrich) in deionized water adjusted to pH 8.5. The resulting mixture was well shaken and  
20 placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the lysozyme-loaded responsive  
25 polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 1 mg/ml lysozyme solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples were withdrawn and their absorbance measured spectrophotometrically at 280 nm. A calibration curve was prepared for lysozyme concentration ranging from 0  
30 mg/ml to 0.5 mg/ml in phosphate buffered saline. The results of the kinetic experiment

are presented in Figure 18. It can be seen that the rate of lysozyme release from the responsive polymer network composition was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

5 In order to demonstrate the retention of the enzymatic activity of lysozyme, the lysozyme released from the responsive polymer network composition was assayed using *Micrococcus lysodeikticus* cells and compared to that of original lysozyme. The enzymatic activity of lysozyme was the same, within the error of the assay (15%), as that of the original lysozyme. Control without lysozyme in presence of sodium dodecyl  
10 sulfate did not show any appreciable lysis of the cells.

Example 13. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of insulin from a responsive polymer network composition is reported.

Insulin loading and release. A 5 wt% responsive polymer network composition  
15 (3 g) was allowed to swell for 15 h in 10 ml of 5 mg/ml solution of bovine Zn<sup>2+</sup>-insulin (Sigma) in deionized water adjusted to pH 7. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was continuously stirred by  
20 a magnetic bar. the cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the insulin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 5 mg/ml insulin solution. After the feed solution had been loaded into the cell, the timing commenced. Samples were  
25 withdrawn and their absorbance was measured spectrophotometrically at 280 nm. A calibration curve was prepared for insulin concentration ranging from 0 mg/ml to 1.25 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 19. The rate of insulin release from responsive polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity  
30 increase in responsive polymer network at elevated temperatures (see Figure 1).

Example 14. This example demonstrates the preparation of a sterile reversibly gelling polymer network aqueous composition and the stability of the composition to sterilization. The polymer network is prepared as described in Example 1, except that the composition is prepared at 2 wt% Pluronic® F127 polyol/poly(acrylic acid). After dissolution of the 2 wt% polymer network in water, the viscosity is measured. The composition then is sterilized by autoclaving at 121°C, 16 psi for 30 minutes. Viscosity is determined after sterilization. The corresponding curves for viscosity (a) before and (b) after sterilization are shown in Figure 20 and establish that minimal change in the viscosity profile of the material has occurred with sterilization.

Examples 15-30. These examples show additives which may be used to affect the transition temperature overall viscosification of the polymer network composition. A 1 wt% polymer network was prepared in deionized water at pH 7 in which a variety of additives were included in the composition. The effect of the additive was determined by generation of a Brookfield viscosification curve. Results are reported in Table 4.

Table 4.

Example No.	Additive (wt%)	Effect of additive on:	
		Transition Temp. (°C)	Final Viscosity (% change)
15	1,2-methyl pyrrolidone (5)	I (1.8)	N
16	Rhodapex CO-436 (2)	I (1.6)	N
17	Dow Corning 190 (2)	I (5)	I (150)
18	isopropyl alcohol (0.5)	I (3.1)	I (45)
19	Pluronic® L122 (1)	D (4.4)	D (13)
20	Pluronic® F88 (1)	N	I (41)
21	Tween 80 (0.5)	N	I (18)
22	Germaben® II (1)	D (9)	I (100)
23	Iconol NP-6 (1)	D (9)	I (500)
24	Plurafac C-17 (0.5)	I (5.2)	D (36)
25	Dow Corning 193 (0.75)	I (4.1)	D (12)



Example No.	Additive (wt%)	Effect of additive on:	
		Transition Temp. (°C)	Final Viscosity (% change)
26	glycerin (5)	D (2)	N-
27	UC 50-HB 170/EO/PO random copolymer (0.5)	N	N
28	PVP K15 (1)	N	N
29	MAPTAC (1)	N	D (8)
30	potassium chloride (0.25)	N	D (34)

I = increase; D = decrease; and N = no change

Example 31. Because of the surfactant nature of the polymer network composition coupled with the gelation effect of the polymer network composition, it is possible to prepare formulations which are 100% water-based, but which are lubricous and thick.

Formulations including a nonionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 5.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Emulsifying Wax NF <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup> Polowax available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a nonionic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Formulations including a cationic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 6.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Behentrimonium Methosulfate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup>Incroquat Behenyl TMS available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added and allowed to mix to homogeneity. This formulation contains a cationic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Formulations including an anionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 7.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Cetearyl Phosphate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup>Crodafos CES available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains an anionic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Example 32. Acne Medication: An oil-free, clear, anti-acne treatment is made by combining the following ingredients utilizing conventional mixing techniques:

Table 8.

ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
Salicylic Acid	2.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
USP Purified Water	72.2

<sup>1</sup>Germaben® II available from Sutton Laboratories

To one vessel, equipped with a Lightnin' Mixer with a 3 blade paddle prop, the full amount of USP Purified Water to 100% w/w is added. While maintaining the temperature, with moderate to vigorous mixing, the formula amount of Disodium EDTA, Citric Acid, DL-Panthenol, Glycerin, Salicylic Acid, and Germaben® II is added. These materials are allowed to dissolve at 50°C. After dissolution, the vessel is then cooled to 20°C. To another vessel, equipped with a high efficiency homogenizer, the formula amount of responsive polymer network is added. The responsive polymer network vessel is then cooled to 4°C. After cooling, while vigorously homogenizing, the contents of the first vessel is added to the second vessel, and allowed to mix to homogeneity.

The composition displays a flowable clear jelly appearance with excellent spreadability and absorption characteristics at room temperature, and after heating the formulation to 32°C, the composition thickens to a gel-like consistency.

Example 33. (a) Oil-free Moisturizer (formulation I): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 9.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
PPG-2 Myristyl Ether Propionate	3.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
Citric Acid	0.01
USP Purified Water	71.19

<sup>1</sup>Germaben® II available from Sutton Laboratories

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The viscosity vs. temperature curve is shown in Figure 21 and demonstrates that addition of adjuvants to the composition significantly enhances the responsive polymer network maximum viscosity (> 900,000 cps). The use of the poloxamer:poly(acrylic acid) polymer network in the formulation also imparts a unique viscosification effect after application to the skin, which is not evident in typical commercial O/W emulsion formulations (See Figure 21b).

(b) Oil-free Moisturizer (formulation II): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 10.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
Carbopol 980	1.0

Ingredient	% w/w
D-Panthenol, propylene glycol	1.0
Preservative	1.0
Hydrolyzed protein (and) hyaluronic acid	0.5
Sodium hydroxide	0.2
USP Purified Water	90

The above ingredients were added and processed as described above for the  
acne composition. The composition displayed a flowable creamy lotion appearance  
with excellent emolliency, spreadability and absorption characteristics at room  
temperature. After heating the formulation to above 26°C, the composition thickened  
to a gel-like consistency. The addition of adjuvants to the composition significantly  
enhances the polymer network maximum viscosity.

Example 34. Sunscreen Lotion. An oil-free, lubricous sunscreen lotion was  
made by combining the following ingredients utilizing conventional mixing techniques:

Table 11.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	8.0
Carbopol 980	1.0
Parsol MCX	7.0
Myristyl Ether Propionate	5.0
Preservative	1.0
Cyclomethicone	1.0
Sodium hydroxide	0.2
USP Purified Water	74

The above ingredients were added and processed as described above for the  
acne composition. The composition displayed a flowable creamy lotion appearance

with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

5        Example 35. Facial mask. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 12.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	1.0
Polyvinyl alcohol	6.0
Polyvinylpyrrolidone (20%)	5.0
D-panthenol, propylene glycol	1.25
Propylene glycol	1.25
USP Purified Water	85.5

10        The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

20        Example 36. Facial toner. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 13.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	0.01
Hydroxyethyl cerydimonium phosphate	1.00
PEG-40 hydrogenated castor oil	2.00

Ingredient	% w/w
D-panthenol, propylene glycol	0.50
Glycerin	2.00
Witch hazel extract	5.00
USP Purified Water	88.49

5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Solubilization studies of model hydrophobic agents in the poloxamer:poly(acrylic acid) polymer network: estradiol and progesterone. This example is presented to demonstrate the solubilization of a hydrophobic agent in the polymeric network. Progesterone and estradiol were used as the hydrophobic agents in this model solubilization study.

Acrylic acid (99%), fluorescein (98%),  $\beta$ -estradiol (98%), and progesterone (98%) were all obtained from Aldrich and used as received. Pluronic® F127 NF was obtained from BASF. Poly(oxyethylene-b-oxypropylene-b-oxyethylene)-g-poly(acrylic acid) copolymers (responsive polymer network) were synthesized by free-radical polymerization of acrylic acid in the presence of poloxamer as described above. The polymer network copolymers discussed here were composed of about 1:1 ratio of PAA to poloxamer. The rheological properties of polymer network were assessed using LVDV-II+ and RVDV-II+ Brookfield viscometers. The microscopic light scattering of 21 nm poly(styrene) latex particles in deionized water and 1 wt% reversibly gelling polymer network was measured using He-Ne laser as described previously (see Matsuo, E.S., Orkisz, M., Sun, S.-T., Li, Y., Tanaka, T., Macromolecules, 1994, 27, 6791). The solubility of fluorescein and hormones in aqueous solutions was measured by the equilibrium of excess solubilizate with the corresponding solution following

removal of undissolved species by centrifugation and filtration. Hydrophobic agents were assayed spectrophotometrically at 240 (progesterone) or 280 nm (estradiol), or by using 70/30 w/w H<sub>2</sub>SO<sub>4</sub>/MeOH (Tsilifonis-Chafetz reagent). In vitro hormone release studies were conducted using thermostated, vertical Franz cells. Spunbonded polypropylene microfilters (micron retention, 15-20) were used as a membrane separating feed and receiver phases in Franz cells. The responsive polymer network, water, ethanol, and 20% PEG in water were observed to wet the membrane. The receiver solution consisted of 20 w% PEG in water (pH 7) and were stirred by magnetic bars. The feed phases composed of responsive polymer network were loaded with either estradiol or progesterone. Each hormone was dissolved in ethanol and the resulting solution was added into the responsive polymer network.

Equilibrium solubility vs. temperature plots for estradiol and progesterone (partition coefficient octanol/water (P) 7200 and 5888, respectively), in aqueous solutions of Pluronic® F127 polyol and responsive polymer network are presented in Figure 22. It can be seen that increasing temperature and concentration (C) of polymers in the solution raises the amount of the hormone dissolved. In Figure 22a, vertical lines represent critical micellar temperatures (CMT) for corresponding Pluronic® F127 polyol solutions. It is interesting to note that the slope of the solubility-temperature plots increased as temperature reached CMT, indicating that solubilization in the Pluronic® solutions was predominantly due to the formation of micelles. Similar trend was observed in the responsive polymer network solutions. The S values in 5% aqueous solutions of branched PAA did not exceed 15 and 40 µg/mL at 60°C for estradiol and progesterone, respectively. The solubility values found for responsive polymer network were the same as S in parent Pluronic® solutions of equivalent concentrations. Therefore, it may be suggested that solubilization behaviors of the responsive polymer network are governed by the properties of the poloxamer incorporated into it. Thermodynamic parameters of the solubilization process with responsive polymer network were calculated using the same approximations as in the micellar solubilization with Pluronic® polyols. See, Saito, Y., Kondo, Y., Abe, M., Sato, T., Chem. Pharm. Bull., 1994, 42, 1348. Namely,



partition coefficient  $P$  was estimated from equilibrium solubilities of estradiol in responsive polymer network and water:

$$P = S_{SH}/S_w \quad (13)$$

by extrapolating the solubility plots of the steroid in Figure 22 to 100% responsive polymer network. Using  $P$  values obtained from data in Figure 23, we calculated the standard free energy change ( $\Delta G$ ), standard enthalpy of solubilization ( $\Delta H$ ), and standard entropy of solubilization ( $\Delta S$ ) using the following expressions:

$$\Delta G = -RT \ln P; \Delta H = -R \Delta \ln P / \Delta (1/T); \Delta S = (\Delta H - \Delta G)/T \quad (14)$$

Thermodynamic parameters obtained along with  $P$  values are given in Table 14.

Apparent partition coefficients and thermodynamic parameters for solubilization of estradiol by responsive polymer network.

Table 14.

T, K	$P = S_{SH}/S_w$	$\Delta G$ kJ/mol	$\Delta H$ kJ/mol	$\Delta S$ J/mol
277	490	-14.3	4.72	68.6
293	520	-15.2		52.0
310	660	-16.7		53.9
323	660	-17.4		54.0
333	660	-18.0		54.0

Negative  $\Delta G$  values indicate spontaneous solubilization at all temperatures, whereas positive  $\Delta H$  shows that the solubilization was endothermic, similar to the solubilization of estriol, as well as indomethacin, by the poloxamer. Notably,  $\Delta S$  of solubilization was always positive, suggesting that the more ordered water molecules surrounding hydrophobic estradiol molecules moved to the less ordered bulk phase when the estradiol was transferred to the hydrophobic core of PPG segments in responsive polymer network. The aggregation of the PPG segments at elevated temperatures provides not only temporary cross-linking in the gel, but also a thermodynamically "friendly" environment for the hydrophobic drugs. Indeed, one can express the free energy of formation of the aggregate core-water interface in responsive

polymer network as:

$$\Delta G = [\sigma P_w(1-\phi) + \sigma W_D \phi](4\pi R^2/n) \quad (15)$$

where  $\sigma P_w$  and  $\sigma W_D$  are the interfacial tensions between pure PPO polymer and water and between water and the drug, respectively;  $\phi$  is the volume fraction of the drug within the PPO core; R is the effective radius of the core; and n is the aggregation number.

Equation (3) shows that solubilization of a hydrophobic drug of high  $\sigma W_D$  should increase the stability of the aggregate. The solubilization process was found to decrease the critical micellization concentration and substantially increase the micellar core radius in Pluronic surfactants (Hurter, P.N., et al., "In Solubilization in Surfactant Aggregates", Christian, S.D., Ed., Marcel Dekker, New York, 1995). A similar trend is indicated by the lowering the onset of gelation of the responsive polymer network upon solubilization of fluorescein (LogP 2.1) (Figure 24). The solubilization of hydrophobic drugs by responsive polymer network, analogous to the micellar solubilization of drugs by poloxamer, suggests that the responsive polymer network can be an effective vehicle in drug delivery.

Our in vitro study of hormone release from responsive polymer network shows an increase in the initial transport rate with either decreasing total polymer concentration in the formulation or decreasing temperature (Figure 25). These effects are related to the changes in macroscopic viscosity of the responsive polymer network, which erodes more rapidly from the feed phase through the membrane into the receiver compartment as the viscosity decreases (Figure 26). The degree of the responsive polymer network erosion was measured by weighing hormone-loaded responsive polymer network before and after kinetic experiment.

Figure 27 shows that the relative amount of progesterone penetrating into the receiver phase decreased 4-fold with the increase of total polymer concentration, whereas the total relative amount of progesterone stayed almost constant as total polymer concentration in the responsive polymer network increased. This result shows the existence of two routes of transport of hydrophobic drugs in our model system. Firstly, the drug incorporated into aggregates within the responsive polymer network

system can flow through the membrane along with the erosion of the responsive polymer network; secondly, the drug not associated with the responsive polymer network aggregates can diffuse out of the responsive polymer network in the feed phase. The second process should not be related to the viscosity of the responsive  
5 polymer network. Indeed, the dynamic light scattering experiment shows no dramatic change of diffusivity of poly(styrene) latex particles in the responsive polymer network as temperature rises thereby increasing macroscopic viscosity more than 10-fold (Figure 28). This result indicates that the viscosity of the responsive polymer network is essentially unaffected on the microscopic scale.

10

Appendix A attached.

## APPENDIX A

FUNCTION DEFINITIONS

- Abrasive:** abrades, smoothes, polishes
- Absorbent powder:** takes up liquids. sponge-like action
- Absorption base:** formes water-in-oil emulsions
- Acidulent:** acidifies, lowers pH, neutralizes alkalis
- Amphoteric:** capable of reacting chemically either as an acid or a base; amphoteric surfactants are compatible with anionic and cationic surfactants
- Analgesic:** relieves pain
- Antacid:** neutralizes stomach acidity
- Antibacterial:** destroys/inhibits the growth/reproduction of bacteria
- Anti-caking:** prevents or retards caking of powders; keeps powders free-flowing
- Anti-dandruff:** retards or eliminates dandruff
- Antifoam:** suppresses foam during mixing
- Anti-inflammatory:** reduces, suppresses, counteracts inflammation
- Anti-irritant:** reduces, suppresses or prevents irritation
- Antimicrobial:** destroys, inhibits or suppresses the growth of microorganisms
- Antioxidant:** inhibits oxidation and rancidity
- Antiperspirant:** reduces or inhibits perspiration
- Antipruritic:** reduces or prevents itching
- Antiseptic:** inhibits the growth of microorganisms on the skin or on living tissue
- Antistat:** reduces static by neutralizing electrical charge on a surface
- Astringent:** contracts organic tissue after application
- Binder:** promotes cohesion of powders
- Bleaching agent:** lightens color, oxidizing agent
- Botanical:** natural plant derivative
- Buffer:** helps maintain original pH (acidity or basicity) of a preparation
- Carrier:** a vehicle or base used for a preparation
- Chelate:** form a complex with trace-metal impurities, usually calcium or iron
- Colorant:** adds color, may be a soluble dy or an insoluble pigment
- Conditioner:** improves condition of skin and hair
- Coupling agent:** aids in solubilization or emulsification of incompatible componenets
- Decolorant:** removes color by adsorption, bleaching or oxiadaon
- Denaturant:** used to denature ethyl alcohol
- Dental powder:** powdered dentifrice
- Deodorant:** destroys, masks, or inhibits formation of unpleasant odors
- Depilatory:** removes hair chemically
- Detergent:** a surface-active agent (surfactant) that cleans by emulsifying oils and suspends particulate soil
- Disinfectant:** destroys pathogenic microorganisms
- Dispersant:** promotes the formation and stabilization of a dispersion or suspension
- Dye stabilizer:** see Stabilizer
- Emollient:** softens, smoothes skin
- Emulsifier:** a surface-active agent (surfactant) that promotes the formation of water-in-oil or oil-in-water emulsions
- Enzymes:** complex proteins produced by living cells that catalyze biochemical reactions at body temperature.
- Fiber:** strands of natural or synthetic polymers; for instance, cotton, wool, silk, nylon, polyester
- Film former:** solution of a polymer that forms films when the solvent evaporates after application to a surface
- Fixative:** fixes or sets perfumes; retards evaporation; promotes longer lasting aroma

- Flavor:** imparts a characteristic taste (and aroma) to edible foods and drinks; sometimes used in lip products
- 5 **Foam booster:** enhances quality and quantity of lather of shampoos
- Foamer:** a surface-active agent (surfactant) that produces foam; an emulsion of air-in-water
- Foam stabilizer:** see Foam booster
- Fungicide:** inhibits or destroys growth of fungi
- 10 **Gellant:** a gelling agent; forms gels; includes a wide variety of materials such as polymers, clays and soaps
- Glosser:** furnishes a surface luster or brightness; usually used in lip or hair products
- 15 **Hair colorant:** see Colorant
- Hair conditioner:** see Conditioner
- Hair dye:** imparts a new permanent or semi-permanent color to hair
- 20 **Hair-set polymer:** polymer and/or resins used to maintain desired hair shape
- Hair-set resin:** see Hair-set polymer
- Hair waving:** see Reducing agent and Neutralizer
- Humectant:** absorbs, holds, and retains moisture
- Hydrotrope:** enhances water solubility
- 25 **Intermediate:** basic chemicals which are chemically modified to obtain the desired function
- Lathering agent:** a surface active agent (surfactant) that forms a foam or lather on mixing with air in solution; see also Foamer
- 30 **Lubricant:** reduces friction, smoothes, adds slip
- Moisture barrier:** retards passage of moisture or water
- 35 **Moisturizer:** aids in increasing the moisture content of the skin through humectant or barrier action
- Neutralizer:** an oxidizing agent used in hair waving that stops the action of the reducing agent and re-establishes the disulfide linkages in hair
- 40 **Oil absorbent:** see Absorbent powder
- Ointment base:** an anhydrous mixture of oleaginous components used as a vehicle for medicaments
- Opacifier:** opacifies clear liquids or solids
- Oxidant:** oxidizing agent, neutralizes reducing agents, bleaching agent
- Pearlant:** imparts a pearlescent texture and luster
- Perfume solvent:** see Solvent and Solubilizer
- Peroxide stabilizer:** see Stabilizer
- Pigment:** a finely powdered insoluble substance used to impart color, luster, or opacity
- Plasticizer:** plasticizes (makes more flexible) polymeric films or fibers
- Polish:** smoothes; adds gloss and luster
- Polymer:** a very high molecular weight compound consisting of repeating structural units
- Powder:** a solid in the form of fine particles
- Preservative:** protects products from spoilage by microorganisms
- Propellant:** pressurized gas in a container used to expel the contents when pressure is released by opening a valve
- Protein:** naturally occurring complex combinations of amino acids
- Reducing agent:** reduces a chemical compound usually by donating electrons; neutralizes oxidizing agents
- Refatting agent:** adds oils materials to the surface of substrates, e.g., skin and hair
- Resin:** nonvolatile solid or semisolid organic substances obtained from plants as exudates to prepared by polymerization of simple molecules
- Sequestrant:** forms coordination complexes with multivalent positive ions
- Silicone:** polymeric organic silicon compounds which are water-resistant
- Skin protectant:** protects the skin from environmental
- Solubilizer:** solubilizes, usually into aqueous vehicles, normally insoluble materials, such as fragrances, flavors, oils, etc.

- Solvent:** usually liquids capable of dissolving other substances
- Stabilizer:** added to stabilize emulsions and/or suspensions
- 5     **Stimulant:** produces a temporary increase in the functional activity of an organism or any of its parts
- 10     **Surfactant** (surface active agent): lowers surface tension between two or more incompatible phases; soaps, detergents, wetting agents, solubilizing agents and emulsifying agents are typical surfactants; surfactants are classified as anionic, cationic, nonionic and amphoteric; anionic surfactants are negatively charged, cationic surfactants have no electrical charge
- 15     **Suspending agent:** keeps finely divided solid particles in suspension
- 20     **Sweetener:** sweetens to provide a more pleasant taste
- Tanning accelerator:** accelerates the tanning of skin
- Thickener:** thickens or increases viscosity/consistency
- 25     **Thixotrope:** the property of certain gels and emulsions of becoming more fluid or less viscous when shaken or stirred
- 30     **UV absorber:** used as a sunscreen and to protect preparations from degradation by UV radiation
- UVA absorber:** absorbs in the range 320-400 nanometers (nm)
- UVB absorber:** absorbs in the range 290-320 nanometers (nm)
- 35     **Wax:** any of numerous substances of plant, animal or synthetic origin that contain principally esters of higher fatty acids and higher fatty alcohols; free fatty alcohols, fatty acids and hydrocarbons may also be present; waxes derived from petroleum products are mainly high-molecular-weight hydrocarbons
- 40     **Wetting agent:** a surface-active agent (surfactant) that lowers the surface and interfacial tension, facilitating the wetting of surfaces
- 45

**FUNCTIONS****Abrasive**

- Adzuki beans
- 5 Almond (*Prunus amygdalus*) meal, shell granules
- Aluminum silicate
- Apricot (*Prunus armeniaca*) kernel powder, shells
- Hydrated silica
- Jojoba (*Buxus chinensis*) seed powder
- 10 Luffa cylindrica
- Olive stone granules
- Oyster shell powder
- Peach (*Prunus persica*) pit powder
- Peach (*Prunus persica*) stone granules
- 15 Polyethylene
- Polyethylene HEC granules
- Polyethylene oxidized, P. spheres
- Polystyrene
- Pumice
- 20 Rice (*Oryza sativa*) bran
- Silica and S. colloidal
- Sodium chloride
- Walnut (*Juglans regia*) shell powder

**Absorption base**

- 1,2,6-Hexanetriol
- Kaolin
- Petrolatum
- Rice (*Oryza sativa*) starch
- 30 Soy (*Glycine soja*) sterol
- Zeolite

**Absorbent powder**

- 35 Corn (*Zea mays*) starch
- Maltodextrin
- Nylon-12
- Oat (*Avena sativa*) bran, flour, meal
- Zeolite

**Acidulent**

- 40 Acetic acid
- Citric acid
- Fumaric acid
- Glutamic acid
- 45 Glycolic acid
- Hydrochloric acid
- Lactic acid
- Nitric acid
- Phosphoric acid
- 50 Sodium bisulfate
- Sulfuric acid
- Tartaric acid

**AHA**

- Apple (*Pyrus malus*) extract
- Apricot (*Prunus armeniaca*) kernel powder
- Citric acid
- Ethyl lactate
- Glycolic acid
- Lactic acid
- Malic acid
- Sodium lactate
- Tartaric acid

**Antiacne**

- Clays (white, yellow, red, green, pink)
- Perfluorodecalin
- Salicylic acid
- Sulfur

**Anti-aging**

- Basil (*Ocimum basilicum*) extract
- Carrot (*Daucus carota*) extract
- Catalpa kaempferi extract
- Ceramide 33 (liquid soy extract)
- Crataegus cuneata extract
- Eugenia jambolana extract
- Fomes fomentarius extract
- Fomistopsis pinicola extract
- Ganoderma lucidum oil
- Ginseng (*Panax ginseng*) extract
- Hyaluronic acid
- Hydrolyzed serum protein
- Hydrolyzed soy flour
- Isachne pulchella extract
- Lactoferrin
- Lady's Thistle (*Silybum marianum*) extract
- Ligusticum jeholense extract
- Marine collagen
- Mushroom (*Coriolus versicolor*) extract
- Must rose (*Rosa moschata*) oil
- Perfluorodecalin
- Quaternium-51
- Rubus thunbergii extract
- Serum protein
- Stenocalyx micalii extract
- Tricholoma matsutake extract

**Antibacterial**

- Ammonium iodide
- Chlorhexidine
- Chlorhexidine diacetate, C. digluconate
- Chlorhexidine dihydrochloride

- Chlorphenesin  
Hexamidine diisethionate  
Hexetidine  
Iceland moss (*Cetraria islandica*) extract  
5 Lactoterrin  
Lauralkonium bromide, L. chloride  
Laurtrimonium chloride  
Laurylpyridinium chloride  
Mauritiella armata extract  
10 Mushroom (*Cordyceps sbolifera*) extract  
Orange blossom extract  
Orange (*Citrus aurantium dulcis*) peel extract  
PEG-42 Ebiriko ceramides extract  
Peppermint (*Mentha piperita*) extract  
15 Philodendron (*Phellodendron amurense*) extract  
Pine (*Pinus sylvestris*) needle extract  
Polymethoxy bicyclic oxazolidine  
Quaternium 73  
20 *Rubus thunbergii* extract  
Tea tree (*Melaleuca alternifolia*) oil  
Triclocarban  
Undecylenic acid

**Anticaking**

- 25 Aluminum starch octenylsuccinate  
Calcium stearate  
Distarch phosphate  
Hydrated silica  
Kaolin  
30 Magnesium myristate, M. silicate  
Polyethylene, micronized  
Silica silylate  
Sodium aluminum silicate  
35 Zinc stearate

**Anticaries agent**

- Cetylamine hydrofluoride  
Olaflur  
Sodium fluoride  
40 Stearyl trihydroxyethyl propylenediamine  
dihydrofluoride

**Anticellulite**

- Aminophylline  
45 Bladderwrack (*Fucus vesiculosus*) extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Carcinia cambogia extract  
Fomes fometarius extract  
Fomistopsis pinicola extract  
50 Ivy extrey  
Mushroom (*Coriolus versicolor*) extract  
TEA-hydroiodide  
Tricholoma matsutake extract

**Antidandruff**

- Burdock (*Arctium lappa*) extract  
Chloroxylonol  
Corydalis ambigua extract  
Disodium undecylenamido MEA-sulfosuccinate  
Ginger root extract  
Inga edulis extract  
Mauritiella armata extract  
Myristalkonium saccharinate

- PEG-6 undecylenate  
Piroctone olamine  
Resorcinol  
Rosemary (*Rosmarinus officinalis*) extract  
Sodium shale oil sulfonate  
Stenocalyx micalii extract  
Undecylenamide DEA  
Willow (*Salix alba*) bark extract  
Zinc pyrithione

**Antifungal**

- Black walnut (*Juglans nigra*) extract  
Coneflower (*Echinacea angustifolia*) extract  
Orange blossom extract  
Pfaffia paniculata extract

**Anti-inflammatory**

- Allantoin polygalacturonic acid  
Bisabolol  
Black poplar (*Populus nigra*) extract  
Brassica rapa-depressa extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Calendula officinalis extract  
Catalpa kaempfera extract  
Celastrus paniculata extract  
Ceramide 33 (liquid soy extract)  
Chaparral (*Larrea mexicana*) extract  
Coneflower (*Echinacea angustifolia*) extract  
Cornflower (*Centaurea cyanus*) extract  
Dipotassium glycyrrhizinate  
Euphatorium fortunei extract  
Duphrasia officinalis extract  
Ficus racemosa extract  
Golden seal (*Hydrastis canadensis*) root extract  
Guaiazulene  
Horse chestnut (*Aesculia hippocastanum*) extract  
Jujube (*Zizyphus jujuba*) extract  
Laminaria japonica extract  
Licorice (*glycyrrhiza glabra*) extract  
Ligusticum jehoiense, L. lucidum extract  
Matricaria (*Chamomilla recutita*) extract  
Melaleuca uncinata extract  
Melia azadirachta extract



- Mulberry (*Morus nigra*) extract  
 Niacinamide ascorbate  
 Orange (*Citrus aurantium dulcis*) peel extract  
 Orange blossom extract  
 5 Palmetto extract  
 Palmitoyl collagen amino acids  
 Passion flower (*Passiflora laurifolia*) fruit extract  
 Paulownia *imperialis* extract  
 Alicyclic acid  
 10 Shea butter (*Butyrospermum parkii*)  
 Sodium carboxymethyl beta-glucan  
 soy (*Glycine soja*) protein  
 Stearyl glycyrrhetinate  
 Stenocalyx *micalii* extract  
 15 Tocopheryl acetate, T. nicotinate  
 Trichomonas *japonica* extract  
 Willow (*Salix alba*) extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 withania *somniferum* extract  
 20 Yarrow (*Achillea millefolium*) extract  
 Zinc lactate
- Anti-irritant**  
 Acetyl monoethanolamine  
 25 Allantoin  
 Allantoin acetyl methionine, A. glycyrrhetinic acid  
 Azelamide MEA  
 Betaine  
 30 Calendula *officinalis* extract  
 Cocamidopropyl betaine  
 Coceth-7 carboxylic acid  
 Cornflower (*Centaurea cyanus*) extract  
 Disostearyl dimer dilinoleate  
 35 Dipalmitoyl cystine  
 Green tea extract  
 Hydrolyzed sweet almond protein  
 Hydroxypropyltrimonium gleatin  
 Lauroyl collagen amino acids  
 40 1-Lysine lauroyl methionine  
 Mallow extract  
 Matricaria (*Chamomilla recutita*) extract  
 Palmitoyl hydrolyzed milk protein  
 Palmitoyl hydrolyzed wheat protein  
 45 Palmitoyl keratin amino acids  
 PEG-12 palm kernel glycerides  
 PEG-28 glyceryl tailowate  
 PEG-30 glyceryl monococoate  
 PEG-60 almond glycerides  
 50 PEG-78 glyceryl cocoate  
 PEG-82 glyceryl tailowate  
 PEG-200 glyceryl tailowate  
 Propionyl collagen amino acids
- PVP  
 Saccharomyces lysate extract  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium lauroamphoacetate  
 Soy (*Glycine soja*) protein  
 Undecylenoyl collagen amino acids  
 Valerian (*Valeriana officinalis*) extract
- Antimicrobial**  
 Benzalkonium chloride  
 Benzoic acid  
 Benzyl alcohol  
 Bromochlorophene  
 2-Bromo-2-nitropropane-1,3-diol  
 Butylparaben  
 Capryloyl collagen amino acids  
 Capryloyl glycine, C. keratin amino acids  
 Captan  
 Cetethyldimonium bromide  
 Cetyl pyridinium chloride  
 Chlorothymol  
 Chloroxylenol  
 Citron oil  
 Copper PCA  
 Dichlorobenzyl alcohol  
 Dilauryldimonium chloride  
 Domiphen bromide  
 Ethylparaben  
 Eucalyptus (*Eucalyptus globulus*) extract  
 Fennel (*Foeniculum vulgare*) extract  
 Garlic (*allium sativum*) extract  
 Glyceryl caprylate, G. laurate  
 Hexamidine diisethionate  
 Hinokitiol  
 Honeysuckle (*Lonicera caprifolium*) extract  
 Lichen (*Usnea barbata*) extract  
 Myristalkonium chloride  
 Pentylene glycol  
 Phenethyl alcohol  
 Phenol  
 Phenoxyethanol  
 Phenoxyisopropanol  
 Phenyl mercuric acetate, P.m. benzoate, P.m. borate  
 o-Phenylphenol  
 Polymethoxy bicyclic oxazolidine  
 Potassium sorbat  
 Propylparaben  
 Ricinoleamodopropyltrimonium ethosulfate  
 Sage (*Salvia officinalis*) extract  
 Sodium benzoate, S. pyrrhione  
 Sodium ricinoleate, S. shale oil sulfonate  
 Thimerosal

- Thyme (*Thymus vulgaris*) extract  
Thymol  
Triclocarban  
Triclosan
- 5 Undecylenamidopropyltrimonium methosulfate  
Undecylenic acid  
Zinc oxide, Z. PCA  
Zinc pyrithione, Z. undecylenate
- 10 **Antioxidant**  
Ascorbic acid  
A. polypeptide  
Ascorbyl oleate, A. palmitate  
Beta-carotene
- 15 BHA  
BHT  
t-Butyl hydroquinone  
Dilauryl thiodipropionate  
Dimyristyl thiodipropionate
- 20 Disodium EDTA  
Distearyl thiodipropionate  
Dodecyl gallate  
EDTA  
Erythorbic acid
- 25 Ferulic acid  
Grape (*Vitis vinifera*) seed extract  
Green tea extract  
HEDTA  
Hydroquinone
- 30 Hydroquinone-beta-D-glucopyranoside  
p-Hydroxyanisole  
Lactoferrin  
Lysine PCA  
Melanin
- 35 Methyl gallate  
Niacinamide ascorbate  
Nordihydroguaiaretic acid  
Oat (*Avena sativa*) extract  
Oryzanol
- 40 Pentasodium pentetate  
Pentetic acid  
Propyl gallate  
Retinyl palmitate polypeptide  
Rosemary (*Rosmarinus officinalis*) extract
- 45 *Saccharomyces* lysate extract  
Sage (*Salvia officinalis*) extract  
Sodium ascorbate, S. erythorbate  
Sodium metabisulfite  
Sodium selenate, S. sulfite
- 50 Superoxide dismutase,  
Tea (*Camellia sinensis*) extract  
Tetrasodium EDTA  
Tocopherol
- Tocopheryl acetate, T. linoleate  
Wild marjoram (*Origanum vulgare*) extract  
Yeast (*Saccharomyces cerevisiae*) extract (Faex)
- Antiperspirant**  
Allantoin-aluminum chlorhydrate  
Aluminum capryloyl hydrolyzed collage  
Aluminum chlorohydrate, A. chloride  
Aluminum chlorohydrate, A. chlorohydrate  
Aluminum PCA, A. sesquichlorohydrate  
Aluminum undecylenoyl collagen amino acids  
Aluminum zirconium pentachlorohydrate  
Aluminum zirconium tetrachlorohydrate  
Aluminum zirconium tetrachlorohydrate GLY  
Aluminum zirconium trichlorohydrate  
Aluminum-zirconium-glycine powder  
Sage (*Salvia officinalis*) extract  
Tormentil (*Potentilla erecta*) extract  
Zirconium chlorohydrate
- Antiseptic**  
Aluminum PCA  
Azadirachta indica extract  
2-Bromo-2-nitropropane-1,3-diol  
Calendula amurensis extract  
p-Chloro-m-cresol  
Clove (*Eugenia caryophyllus*) oil  
Crataegus cuneata extract  
Dichlorobenzyl alcohol  
Entada phaseoloides extract  
Eucalyptus (*Eucalyptus globulus*) extract  
Golden seal (*Hydrastis canadensis*) root extract  
Hexachlorophene  
Melia australasica, M. azadirachta extract  
Methyl salicylate  
Orange (*Citrus aurantium dulcis*) peel extract  
Oxyquinoline sulfate  
Pfaffia paniculata extract  
Potassium abietoyl hydrolyzed collagen  
PVP-iodine  
Silver nitrate  
Sodium salicylate  
Sterculia platanifolia extract  
Tea tree (*Melaleuca alternifolia*) oil  
Tormentil (*Potentilla erecta*) extract  
Xanthoxylum bungeanum extract
- Antistat**  
Acetamide MEA  
Acetamidopropyl trimonium chloride  
6-(N-Acetyl-amino)-4-oxyhexyltrimonium chloride  
Alkyl dimethyl betaine

- Babassuamidopropylalkonium chloride  
Behenamidopropyl ethyldimonium ethosulfate  
Behenamidopropyl hydroxyethyl dimonium chloride  
5 Carboxymethyl chitin  
Cetethyl morpholinium ethosulfate  
Cetrimonium chloride  
Chitin  
Chitosan  
10 Cocamidopropyl ethyldimonium ethosulfate  
Cocodimonium hydroxypropyl hydrolyzed rice protein  
Cocodimonium hydroxypropyl hydrolyzed soy protein  
15 Dimethicone hydroxypropyl trimonium chloride  
dimethyl behenamine, D. cocamine  
Dimethyl palmitamine, D. soyamine  
Dimethyl tailowamine  
Dioleylamidoethyl hydroxyethylmonium  
20 methosulfate  
Dipalmitoylethyl hydroxyethylmonium methosulfate  
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
25 Erucamidopropyl hydroxysultaine  
Glyceryl monopyroglutamate  
Hydrogenated tailowamine oxide  
Isostearyl propyl dimethylamine  
Lactamidopropyl trimonium chloride  
30 Lauryldimonium hydroxypropyl hydrolyzed collagen  
Linoleamidopropyl dimethylamine dimer dilinoleate  
Olealkonium chloride  
35 PEG-2 cocamine  
PEG-2 cocomonium chloride  
PEG-2 oleammonium chloride  
PEG-8 caprylic/capric glycerides  
PEG-10 cocamine  
40 PEG-15 soyamine  
PPG-9 diethylmonium chloride  
PPG-25 diethylmonium chloride  
PPG-40 diethylmonium chloride  
Propylene glycol stearate  
45 Quaternium-26, -27, -53, -62, -72  
Rapeseedamidopropyl benzyldimonium chloride  
Rapeseedamidopropyl epoxypropyl dimonium chloride  
Silica, colloidal  
50 Sorbitan caprylate  
N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Soyethyl morpholinium ethosulfate  
Soyethyldimonium ethosulfate  
Stearalkonium chloride  
Stearamidopropyl benzyl dimonium chloride  
Stearamidopropyl ethyldimonium ethosulfate  
Steartrimonium chloride  
N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Wheat germamidopropylethyldimonium ethosulfate
- Astringent**  
Aluminum citrate, A. lactate  
Astragalus sinicus extract  
Astrocaryum murumuru, A. tucuma extract  
Azadirachta indica extract  
Azelamide MEA  
Bearberry (Arctostaphylos uva-ursi) extract  
Birch (Betula alba) leaf extract  
Catalpa kaempfera extract  
Celastrus paniculata extract  
Coccinea indica extract  
Coffee (Coffea arabica) bean extract  
Euphrasia officinalis extract  
Euterpe precatoria extract  
Evening primrose (Oenothera biennis) extract  
Gentian (Gentiana lutea) extract  
Geranium maculatum extract  
Grape (Vitis vinifera) leaf extract  
Henna (Lawsonia inermis) extract  
Hierochloa odorata extract  
Honeysuckle (Lonicera caprifolium) extract  
Hops (Humulus lupulus) extract  
Horesetail extract  
Hypericum perforatum extract  
Ivy extract  
Juniperus communis extract  
Kadsura heteliloca extract  
Kola (Cola acuminata) extract  
Lady's mantle (Alchemilla vulgaris) extract  
Lemon (Citrus medica limonum) extract, peel extract  
Lemon bioflavonoids extract  
Lysimachia foenum-graecum extract  
Magnolia spp. extract  
Mauritia flexosa extract  
Maximilliana regia extract  
Melaleuca uncinata, M. wilsonii extract  
Melia australasica extract  
Nettle (Urtica dioica) extract  
Oak (Quercus) bark extract  
Ocimum basilicum, O. santum extract  
Palmetto extract  
Passion flower (Passiflora laurifolia) fruit extract

- Plantain (*Plantago major*) extract  
 Polygonum multiflorum extract  
 Pterocarpus marsupianus extract  
 Raspberry (*Rubus*) extract  
 5 Sambucus nigra oil  
 Sanguisorbae root extract  
 Selinum spp. extract  
 Shorea robusta extract  
 Tannic acid  
 10 Walnut (*Juglans regia*) leaf extract, oil  
 Wheat (*Triticum vulgare*) protein  
 White nettle (*Lamium album*) extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 Xanthozylum bungeanum extract  
 15 Zinc lactate  
 Ziziphus jujuba extract
- Binder**  
 Aluminum starch octenylsuccinate  
 20 Boron nitride  
 C20-40, C30-50, C40-60 alcohols  
 Calcium stearate  
 Cellulose gum  
 Dihydroabietyl behenate  
 25 Diisostearyl malate  
 dioctyl sebacate  
 Distarch phosphate  
 ethylcellulose  
 Gellan gum  
 30 Hydrogenated jojoba oil  
 Isocetyl alcohol, I. palmitate  
 Isopropyl isostearate  
 Isostearyl erucate, I. isostearate  
 Isostearyl neopentanoate  
 35 Maltodextrin  
 Methylcellulose  
 Microcrystalline cellulose  
 Octyl palmitate  
 Octyldodecyl myristate  
 40 bis-Octyldodecyl stearoyl dimer dilinoate  
 Octyldodecyl stearoyl stearate  
 Oleyl oleate  
 PEG-20, -75, -150, -240, -350  
 Polydipentene  
 45 Polyethylene; P. micronized  
 PTFE  
 PVP  
 Sorbitol  
 Synthetic wax  
 50 Tapioca dextrin  
 Tridecyl benenate, T. neopentanoate  
 Tridecyl stearoyl stearate  
 Trisodium HEDTA

**Biol. polymer**

Distarch phosphate  
 Dog rose (*Rosa canina*) see extract  
 Hydrogen peroxide  
 Kojic acid  
 Mulberry (*Morus nigra*) extract  
 Sanguisorbae root extract

**Botanical**

Acacia  
 Acacia farnesiana extract  
 Agrimony (*Agrimonia eupatoria*) extract  
 Alder (*Alnus firma*) extract  
 Alfalfa (*Medicago sativa*) extract  
 Algae (*Ascophyllum nodosum*) extract  
 Algae (*Lithothamnium calcareum*) extract  
 Aloe barbadensis, A.b. extract  
 Aloe capensis extract  
 Alpine Veronica extract  
 Althea officinalis extract  
 Angelica archangelica extract  
 Anise (*Pimpinella anisum*) extract  
 Apple (*Pyrus malus*) extract  
 Apricot (*Prunus armeniaca*) extract  
 Arnica montana extract  
 Artemisia capillaris extract  
 Artichoke (*Cynara scolymus*) extract  
 Asafetida (*Ferula assa foetida*) extract  
 Asiasarum \_\_\_\_\_ extract  
 Asparagus officinalis extract  
 Astragalus sinicus extract  
 Avena (*Geum rivale*) extract  
 Avocado (*persea gratissima*) extract  
 Balm mint (*Melissa officinalis*) extract, oil extract  
 Vanana (*Musa sapientum*) extract  
 Barley (*Hordeum vulgare*) extract  
 Basil (*Ocimum basilicum*) extract  
 Bearberry (*Arctostaphylos uva-ursi*) extract  
 Bee pollen extract  
 Beet (*Beta vulgaris*) extract  
 Betaglucan  
 Bilberry (*Vaccinium myrtillus*) extract  
 Bioflavonoids  
 Birch (*Betula alba*) bark extract, leaf extract  
 Birch (*Betula platyphylla japonica*) extract  
 Bitter orange (*Citrus aurantium amara*) extract,  
 flower extract, peel extract  
 Black cohosh (*Cimicifuga racemosa*) extract  
 Black currant (*Ribes nigrum*) extract  
 Black henna extract  
 Black poplar (*Populus nigra*) extract  
 Black walnut (*Juglans nigra*) extract  
 Bladderwrack (*Fucus vesiculosus*) extract

- Borage (*Borago officinalis*) extract  
 Buckthorn (*Frangula alnus*) extract  
 Burdock (*Arctium lappa*) extract  
 Burdock (*Arctium minus*) root extract  
 5 Burnet extract  
 Butcherbroom (*Ruscus aculeatus*) extract  
 Cabbage rose (*Rosa centifolia*) extract  
 Calamus (*Acorus calamus*) extract  
 Calendula officinalis extract  
 10 Caper (*Capparis spinosa*) extract  
 Capsicum frutescens extract, C.f. oleoresin  
 Caraway (*Carum carvi*) extract  
 Carrageenan (*Chondrus crispus*)  
 Carrot (*Daucus carota*) extract  
 15 Carrot (*Daucus carota sativa*) oil  
 Cassia auriculata extract  
 Celandine (*Chelidonium majus*) extract  
 Chamomile (*Anthemis nobilis*) extract, oil  
 Chaparral (*Larrea mexicana*) extract  
 20 Cherry (*Prunus speciosa*) leaf extract  
 Cherry bark, C.b. extract  
 Chestnut (*Castanea sativa*) extract  
 Chinese hibiscus (*Hibiscus rosa-sinensis*) extract  
 Chlorella vulgaris extract  
 25 Cimicifuga foetida rhizome extract  
 Cinchona succiruba extract  
 Citroflavonoid, water soluble  
 Citrus bioflavonoid complex  
 Clary extract  
 30 Clove (*Eugenia caryophyllus*) extract  
 Clover (*Trifolium pratense*) extract  
 \_\_\_\_\_ officinale rhizome extract, C.o.  
 water  
 Coffee (*Coffea arabica*) bean extract  
 35 \_\_\_\_\_ oatmeal  
 \_\_\_\_\_ (*Tussilago farfara*) leaf extract  
 \_\_\_\_\_ (*Symphytum officinale*) leaf extract  
 \_\_\_\_\_ extract  
 \_\_\_\_\_ (*Echinacea angustifolia*) extract  
 40 \_\_\_\_\_ officinalis  
 \_\_\_\_\_ olitorius extract  
 \_\_\_\_\_ (*Coriandrum sativum*) extract  
 \_\_\_\_\_ (*Zea mays*) cob powder, silk extract  
 \_\_\_\_\_ poppy (*Papaver rhoeas*) extract  
 45 \_\_\_\_\_ (*Centaurea cyanus*) extract  
 \_\_\_\_\_ (*Agropyron repens*) grass  
 \_\_\_\_\_ monogina extract  
 \_\_\_\_\_ maritimum extract  
 Cucumber (*Cucumis sativus*) extract  
 50 Cypress (*Cupressus sempervirens*) extract  
 Dandelion (*Taraxacum officinale*) extract  
 Date (*Phoenix dactylifera*) extract  
 Dead Sea Mud, Salts  
 Dog rose (*Rosa canina*) hips extract  
 Dyer's broom extract  
 Eleuthero ginseng (*Acanthopanax senticosus*)  
 extract  
 Elm (*Ulmus campestris*) extract  
 Eucalyptus (*Eucalyptus globulus*) extract  
 Eucalyptus globulus oil  
 Eucommia ulmoides extract  
 Euphrasia officinalis extract  
 Evening primrose (*Oenothera biennis*) extract, oil  
 Everlasting (*Helichrysum arenarium*) extract  
 Fennel (*Foeniculum vulgare*) extract  
 Fenugreek extract  
 Fermented rice (*Oryza sativa*) extract  
 Fern (*Dryopteris filix-Mas*) extract  
 Fig (*Ficus carica*) extract  
 Fir needle extract  
 Fumitory (*Fumaria officinalis*) extract  
 Gardenia florida extract  
 Garlic (*Allium sativum*) extract  
 Gelidium cartilagineum  
 Gentian (*Gentiana lutea*) extract  
 Geranium maculatum extract  
 Ginger root extract  
 Ginkgo biloba extract  
 Ginseng (*Panax ginseng*) extract  
 Glycyrrhetic acid  
 Glycyrrhizic acid  
 Glycyrrhizin ammoniated  
 Golden seal (*Hydrastis canadensis*) root extract  
 Goldthread (*Coptis japonica*) extract  
 Gotu kola extract  
 Grape (*Vitis vinifera*) distillate, extract  
 Grape (*Vitis vinifera*) leaf, seed extract  
 Grape skin extract  
 Grapefruit (*Citrus grandis*) peel extract  
 Green bean (*Phaseolus lunatus*) extract  
 Ground Ivy (*Glechoma hederacea*) extract  
 Guarana (*Paullinia cupana*) extract  
 Harpagophytum procumbens extract  
 Hay flower extract  
 Hazel (*Corylus avellana*) nut extract  
 Henna (*Lawsonia inermis*) extract  
 Hesperidin, H, methyl chalcone  
 Hibiscus sabdariffa extract  
 Hibiscus syriacus extract  
 High beta-glucan barley flour  
 Honeysuckle (*Lonicera caprifolium*) extract  
 Honeysuckle (*Lonicera japonica*) leaf extract  
 Hops (*Humulus lupulus*) extract  
 Horse chestnut (*Aesculia hippocastanum*) extract  
 Horseradish (*Cochlearia armoracia*) extract  
 Horsetail extract

- 5 Houttuynia cordata extract  
 Hyacinth (*Hyacinthus orientalis*) extract  
 Hydrocotyl (*Centella asiatica*) extract  
 Hydrolyzed oat protein, soy flour  
 5 Hypericum perforatum extract  
 Hyssop (*Hyssopus officinalis*) extract  
 Indian cress (*Tropaeolum majus*) extract  
 Isodonis Japonicus extract  
 Ivy extract  
 10 Japanese angelica (*Angelica acutiloba*) extract, water  
 Japanese hawthorn (*Crataegus cuneata*) extract  
 Jasmine (*Jasminum officinale*) extract  
 Job's tears (*Coix lacryma-jobi*) extract  
 15 Jojoba (*Buxus chinensis*) seed powder  
 Juniperus communis extract  
 Kelp (*Macrocystis pyrifera*) extract  
 Kiwi (*Actinidia chinensis*) fruit extract, seed oil  
 Kola (*Cola acuminata*) extract  
 20 Krameria triandra extract  
 Lady's mantle (*Alchemilla vulgaris*) extract  
 Lady's Thistle (*Silybum marianum*) extract  
 Laurel (*Laurus nobilis*) extract  
 Lavender (*Lavandula angustifolia*) extract, water  
 25 Lemon (*Citrus medica limonum*) extract, juice extract, peel extract  
 Lemon bioflavonoids extract  
 Lemongrass (*Cymbopogon schoenanthus*) extract  
 Leopard flower (*Belamcanda chinensis*) root extract  
 30 Lettuce (*Lactuca scariola sativa*) extract  
 Licorice (*Glycyrrhiza glabra*) extract  
 Lilac (*Syringa vulgaris*) extract  
 Linden (*Tilia argentea*) extract  
 35 Linden (*Tilia cordata*) extract, water  
 Loquat (*Eriobotrya japonica*) leaf extract  
 Maidenhair fern extract  
 magnolia kobus extract  
 Mallow extract  
 40 Mandragora officinarum extract  
 Mannan  
 Marigold  
 Marine silts  
 Matricaria (*Chamomilla recutita*) extract  
 45 Meadowsweet (*Spiraea ulmaria*) extract  
 Melon (*Cucumis melo*) extract  
 MEA iodine  
 Mistletoe (*Viscum album*) extract  
 Mugwort (*Artemisia princeps*) extract, water  
 50 Mulberry (*Morus alba*) root extract  
 Mushroom extract  
 Myrrh (*Commiphora myrrha*) extract  
 Nasturtium extract  
 Neroli extract  
 nettle (*Urtica dioica*) extract  
 Oak (*Quercus*) bark extract  
 Oak root extract  
 Oat (*Avena sativa*) bran, bran extract, flour, protein  
 Oat flower  
 Olive (*Olea europaea*) extract, leaf extract  
 Onion (*Allium cepa*) extract  
 Orange blossom extract  
 Orange (*Citrus aurantium dulcis*) flower extract, peel extract  
 Pansy (*Viola tricolor*) extract  
 Papaya (*Carica papaya*) extract  
 Parsley (*Carum petroselinum*) extract  
 Passion flower (*Passiflora laurifolia*) fruit extract  
 Passionflower (*Passiflora incarnata*) extract  
 Pea (*Pisum sativum*) extract  
 Peach (*Prunus persica*) extract, leaf extract  
 Pelargonium capitatum extract  
 Pellitory (*Parietaria officinalis*) extract  
 Pennyroyal (*Mentha pulegium*) extract  
 Peony (*Paeonia alba*) extract  
 Peony (*Paeonia obovata*) root extract  
 Peppermint (*Mentha piperita*) extract, oil  
 Perilla ocymoides extract  
 Periwinkle (*Vinca minor*) extract  
 PEG-80 jojoba acid/alcohol  
 PEG-120 jojoba acid/alcohol  
 Puffball (*Puffball*) extract  
 Pheledendron amurense extract  
 Phospholipids  
 pimento (*Pimenta officinalis*) extract  
 Pine (*Pinus sylvestris*) cone, needle extract  
 Pineapple (*Ananas sativus*) extract  
 Plantain (*Plantago major*) extract  
 Pollen extract  
 Pongamol  
 Poria Cocos extract  
 Pueraria lobata extract  
 Queen of the meadow extract  
 Quillaja saponaria extract  
 Quince (*Pyrus cydonia*) seed extract  
 Quinoa (*Chenopodium quinoa*) extract  
 Raspberry (*Rubus*) extract  
 Rauwolfia (*Serpentina*) extract  
 Red clover  
 Rehmannia chinensis extract  
 Restharrow (*Ononis spinosa*) extract  
 Rhododendron chrysanthum extract  
 Rhodophyceae extract  
 Rhubarb (*Rheum palmatum*) extract  
 Rice (*Oryza sativa*) bran extract

- Rice fatty acid  
 Rose (*Rosa multiflora*) extract  
 Rosemary (*Rosmarinus officinalis*) extract  
 Rubia tinctorum extract  
 5 Safflower (*Carthamus tinctorius*) extract  
 Sage (*Salvia officinalis*) extract, water  
 Sambucus nigra berry extract, extract  
 Sandalwood (*Santalum album*) extract  
 Sanguinaria canadensis extract  
 10 Saponaria officinalis extract  
 Sasa veitchii extract  
 Saxifraga sarmentosa extract  
 Scabiosa arvensis extract  
 Scutellaria baicatisensis root extract  
 15 Silk extract  
 Silver fir (*Abies pectinata*) extract  
 Sisal (*Agave rigida*) extract  
 Slippery elm extract  
 Soapberry (*Sapindus mukuross*) extract  
 20 Sophora angustifolia extract  
 Sophora flavescens root extract  
 Sophora japonica extract  
 Soybean (*Glycine soja*) extract  
 Soy (*Glycine soja*) germ extract, protein, sterol  
 25 Spearmint (*Mentha viridis*) extract, oil  
 Spinach (*Spinacia oleracea*) extract  
 Spiraea ulmaria extract  
 Sunflower (*Helianthus annuus*) seed extract  
 Sweet almond (*Prunus amygdalus dulcis*) extract  
 30 Sweet cherry (*Prunus avium*) extract  
 Sweet cicely (*Anthriscus cerefolium*) extract  
 Sweet clover (*Melilotus officinalis*) extract  
 Sweet violet (*Viola odorata*) extract  
 Swertia chirata extract  
 35 Tea (*Camellia sinensis*) extract  
 Thyme (*Thymus vulgaris*) extract  
 Tomato (*Solanum lycopersicum*) extract  
 Tormentil (*Potentilla erecta*) extract  
 Tuberose (*Polianthes tuberosa*) extract  
 40 Turmeric (*Curcuma longa*) extract  
 Valerian (*Valeriana officinalis*) extract  
 Walnut (*Juglans regia*) extract, leaf extract  
 Water Lily (*Nymphaea alba*) root extract  
 Watercress (*Nasturtium officinale*) extract  
 45 Wheat (*Triticum vulgare*) extract, protein  
 Wheat (*Triticum vulgare*) germ extract  
 Wheat bran lipids  
 White ginger (*Hedychium coronarium*) extract  
 White nettle (*Lamium album*) extract  
 50 Wild agrimony (*Potentilla anserina*) extract  
 Wild cherry (*Prunus serotina*) bark extract  
 Wild indigo (*Baptista tinctoria*)  
 Wild marjoram (*Origanum vulgare*) extract
- Willow (*Salix alba*) bark extract, extract  
 Willow (*Salix alba*) leaf extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 Yarrow (*Achillea millefolium*) extract  
 Yeast (*Saccheromyces cerevisiae*) extract (Faex)  
 Yucca vera extract  
 Zanthoxylum piperitum extract  
 Zedoary (*Curcuma zedoraria*) oil
- Buffer**  
 Ammonium carbonate, A. phosphate  
 Calcium hydroxide, C. phosphate  
 Citric acid  
 Ethanolamine HCl  
 Glycine  
 Phosphoric acid  
 Potassium phosphate  
 Potassium sodium tartrate  
 Sodium acetate, S. citrate  
 Sodium lactate, S. phosphate  
 Succinic acid  
 Tromethamine
- Carrier**  
 Acrylates copolymer, spherical powder  
 Arginine  
 Caprylic/capric triglyceride  
 Caprylic/capric/lauric triglyceride  
 Caprylic/capric/oleic triglyceride  
 Cetareth-20  
 Coconut (*Cocos nucifera*) oil  
 Cyclodextrin  
 Dipropylene glycol  
 Glyceryl caprylate, G. caprylate/caprate  
 Hydrated silica  
 Liposomes  
 magnesium silicate  
 Methyl propanediol  
 PEG-8/SMDI copolymer  
 Potassium chloride  
 PPG-12/SMDI Copolymer  
 PPG-51/SMDI Copolymer  
 Propylene carbonate, P. glycol  
 Serum albumin  
 Sodium carboxymethyl beta-glucan  
 Sodium chloride  
 sodium magnesium silicate  
 Tapioca dextrin
- Chelators**  
 beta-Alanine diacetic acid  
 Calcium disodium EDTA  
 Disodium EDTA, -copper

- EDTA  
HEDTA  
Malic acid  
Monostearyl citrate  
5 Pentasodium pentetate  
Pentetic acid  
Phytic acid  
Potassium aspartate  
Sodium aspartate  
10 Sodium dihydroxyethylglycinate  
Sodium hexametaphosphate  
Tetrahydroxypropyl ethylenediamine  
Tetrasodium EDTA  
Tripotassium EDTA  
15 Trisodium EDTA, HEDTA
- Cell stimulant**  
Aesculus chinensis extract  
Artemisia apiacea extract  
20 Astrocaryum muru, A. tucuma extract  
Bactris gasipaes extract  
Borjoa sorbilis extract  
Calendula amurensis extract  
Chrysanthemum morifolium extract  
25 Coccinea indica extract  
Comfrey (Symphytum officinale) leaf extract  
Condurango extract  
Dandelion (Taraxacum officinale) extract  
Echitea glauca extract  
30 Equisetum arvense extract  
Eucalyptus (Eucalyptus globulus) extract  
Euphorium fortunei extract  
Euterpe precatoria extract  
Ficus racemosa extract  
35 Glycoproteins  
Hierochloe odorata extract  
Horse chestnut (Aesculia hippocastanum) extract  
Inga edulis extract  
Kadsura heteliloca extract  
40 Ligustrum lucidum extract  
Lysimachia foenum-graecum extract  
Mauritia flexosa extract  
Maximiliana regia extract  
Melaleuca bracteata, M. symphyocarp extract  
45 Nelumbium speciosum extract  
Ocimum basilicum extract, O. santum extract  
Paulownia imperialis extract  
Pfaffia spp. extract  
Pterocarpus marsupianus extract  
50 Rubus thunbergii extract  
Selinum spp. extract  
Shorea robusta extract  
Xanthozylum bungeanum extract

**Cleansing**

Birch (Betula alba) leaf extract  
Lemongrass (Cymbopogon schoenanthus) extract  
Oat (Avena sativa) bran extract  
Passion glower (Passiflora laurifolia) fruit extract  
Witch hazel (Hamamelis virginiana) extract  
Yarrow (Achillea millefolium) extract

**Conditioner**

Acetamide MEA  
6-(N-Acetylamino)-4-oxyhexyltrimonium chloride  
Acrylamidopropyltrimonium chloride/acrylamide copolymer  
Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer  
AMP-isostearoyl hydrolyzed wheat protein  
Apricot (Prunus armeniaca) kernel oil  
Behenalkonium chloride  
Behenamidopropyl dihydroxypropyl dimonium chloride  
Behenamidopropyl ethyldimonium ethosulfate  
Behenamidopropyl PG-dimonium chloride  
Behenamidopropylidimethylamine behenate  
Behenamine oxide  
Behenoyl PG-trimonium chloride  
Behenyl betaine  
Benzyltrimonium hydrolyzed collagen  
Canolamidopropyl betain  
Capramide DEA  
Caprylic/capric/lauric triglyceride  
Caprylyl pyrrolidone  
Cassia auriculata extract  
Cetamine oxide  
Cetearalkonium chloride  
Chitosan PCA  
Citric acid  
Cocamidopropyl dimethylamine, C.d. lactate, C.d. propionate  
Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen  
Cocamidopropylidimonium hydroxypropylhydrolyzed collagen  
Cocamidopropyl ethyldimonium ethosulfate  
Cocamidopropyl PG-dimonium chloride, C.P.c. phosphate  
Coco-morpholine oxide  
Coco/oleamidopropyl betaine  
Cocodimonium hydroxypropyl hydrolyzed hair keratin  
Cocodimonium hydroxypropyl hydrolyzed rice protein  
Cocodimonium hydroxypropyl hydrolyzed silk



- Cocodimonium hydroxypropyl hydrolyzed soy protein  
 Coconut alcohol  
 N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
 Collagen phthalate  
 Dibehenyl/diarachnidyl dimonium chloride  
 Dibehenyldimonium chloride  
 Didecyldimonium chloride  
 Dihydroxyethyl cocamine oxide  
 Dihydroxyethyl dihydroxypropyl stearamonium chloride  
 Dihydroxyethyl tallow glycinate  
 Dihydroxyethyl tallowamine oxide  
 Dilauryl acetyl dimonium chloride  
 Dilinoleamidopropyl dimethylamine  
 Dimethyl hydrogenated tallowamine  
 Dimethyl lauramine, D.I. isostearate  
 Dimethyl myristamine, soyamine, stearamine  
 Dimethylamidopropylamine dimerate  
 Disodium hydrogenated cottonseed glyceride sulfosuccinate  
 Disodium laureth sulfosuccinate  
 Disodium lauroamphodiacetate  
 Distearyldimonium chloride  
 Ethyl ester of hydrolyzed keratin  
 N-Ethylether-bis-1,4-(N-isostearylamidopropyl)-N,N-dimethyl ammonium chlo  
 Glutamic acid  
 Glycerol collagenate  
 Glycine  
 Guar hydroxypropyltrimonium chloride  
 Henna (*Lawsonia inermis*) extract  
 Hydrogenated tallowamine oxide  
 Hydrogenated tallowtrimonium chloride  
 Hydrolyzed conchiorin protein  
 Hydrolyzed egg protein  
 Hydrolyzed extensin  
 Hydrolyzed fibronectin  
 Hydrolyzed fish protein  
 Hydrolyzed keratin  
 Hydrolyzed lactalbumin  
 Hydrolyzed milk protein  
 Hydrolyzed oats  
 Hydrolyzed reticulon  
 Hydrolyzed soy protein  
 Hydrolyzed sweet almond protein  
 Hydrolyzed wheat protein/PVP copolymer  
 Hydrolyzed wheat protein polysiloxane polymer  
 Hydroxycetyl hydroxyethyl dimonium chloride  
 Hydroxyproline  
 Hydroxypropyl chitosan  
 Hydroxypropyl guar hydroxypropyltrimonium chloride  
 Hydroxypropyl-bis-isostearamidopropyltrimonium chloride  
 Hydroxypropyl bis-stearyldimonium chloride  
 Hydroxypropyltrimonium gelatin  
 Hydroxypropyltrimonium hydrolyzed keratin  
 H.h. silk  
 Hydroxypropyltrimonium hydrolyzed wheat protein  
 Isopropyl hydroxybutyramide dimethicone copolyol  
 Isopropyl lanolate  
 Isostearamidopropyl betaine, I. dimethylamine  
 Isostearamidopropyl dimethylamine gluconate  
 Isostearamidopropyl dimethylamine glycolate  
 Isostearamidopropyl dimethylamine lactat  
 Isostearamidopropyl ethyldimonium ethosulfate  
 Isostearamidopropyl laurylaceto-dimonium chloride  
 Isostearamidopropyl morpholine, I.m. lactate  
 Isostearamidopropyl morpholine oxide  
 Isostearamidopropyl PG-dimonium chloride  
 Isostearaminopropalkonium chloride  
 Isostearyl hydrolyzed animal protein  
 Isostearylamidopropyl dihydroxypropyl dimonium chloride  
 Lactoglobulin  
 Lauramidopropyl dimethylamine  
 Lauramidopropyl PG-dimonium chloride, I.P.c. phosphate  
 Lauramine oxide  
 Lauroampho PG-glycinate phosphate  
 Lauroyl hydrolyzed collagen, L.h. elastin  
 Lauroyl silk amino acids  
 Lauryl methyl gluceth-10 hydroxypropyl-dimonium chloride  
 Lauryl phosphate, L. pyrrolidone  
 Lauryldimonium hydroxypropyl hydrolyzed collagen, keratin, soy protein  
 Linoleamidopropyl dimethylamine  
 Milk amino acids  
 Milk protein (*Lactis proteinum*)  
 Myristalkonium chloride  
 Myristamidopropyl betaine, M. dimethylamine  
 Myrtrimonium bromide  
 Oat (*Avena sativa*) protein  
 Oleamide  
 Oleamidopropyl betaine, O. dimethylamine  
 Oleamidopropyl dimethylamine hydrolyzed collagen  
 Oleamidopropylamine oxide  
 Oleamine

- Oleamine oxide  
 Oleoyl sarcosine  
 Oleyl betaine  
 Oleyl dimethylamidopropyl ethonium ethosulfate  
 5 Palmitamidopropyl betaine  
 Palmitamidopropyl dimethylamine  
 Palmitamine, P. oxide  
 Panthenyl hydroxypropyl steardimonium chloride  
 PEG-2 milk solids  
 10 PEG-2 oleammonium chloride  
 PEG-3 lauramine oxide  
 PEG-5 stearyl ammonium lactate  
 PEG-15 cocomonium chloride  
 PEG-15 cocopolyamine  
 15 PEG-15 tallowmonium chloride  
 PEG-27  
 PEG-40  
 PEG-85 lanolin  
 PEG-7000  
 20 Polydimethicone copolyol  
 Polymethacrylamidopropyltrimonium chloride  
 Polyoxyethylene dihydroxypropyl linoleaminium chloride  
 Polyquaternium-2, -5, -6, -11, -16  
 25 Polyquaternium-17, -18, -24, -29, -44  
 Potassium dimethicone copolyol panthenyl phosphate  
 Potassium lauroyl collagen amino acids  
 Potassium lauroyl hydrolyzed soy protein  
 30 Potassium lauroyl wheat amino acids  
 Potassium stearyl hydrolyzed collagen  
 PPG-5 lanolin alcohol ether  
 PPG-9 diethylmonium chloride  
 PPG-20 lanolin alcohol ether  
 35 Proline  
 Propylene glycol stearate  
 PVP/dimethiconylacrylate/polycarbamyl/polyglycol ester  
 40 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/dimethylaminoethylmethacrylate/polycarbamyl/polyglycol ester  
 PVP/hydrolyzed wheat protein copolymer  
 Quaternium-22, -26, -33, -61, -62, -70, -80  
 45 Quaternium-76 hydrolyzed collagen  
 Rapeseedamidopropyl benzyldimonium chloride  
 Rapeseedamidopropyl epoxypropyl dimonium chloride  
 Rapeseedamidopropyl ethyldimonium ethosulfate  
 50 Rice peptide  
 Ricinoleamidopropyl-dimonium ethosulfate  
 Ricinoleamidopropyl betaine  
 Ricinoleamidopropyl dimethylamine lactate  
 Ricinoleamidopropyl ethyldimonium ethosulfate  
 Ricinoleamidopropyltrimonium chloride  
 Ricinoleamidopropyltrimonium ethosulfate  
 Silicone quaternium-3, -4  
 Silk amino acids  
 Sodium/TEA-lauroyl collagen amino acids  
 Sodium/TEA-lauroyl hydrolyzed keratin  
 Sodium/TEA-lauroyl keratin amino acids  
 Sodium citrate  
 Sodium cocoyl hydrolyzed soy protein  
 Sodium hydrogenated tallow dimethyl glycinate  
 Sodium lauroyl collagen, keratin amino acids  
 Sodium lauroyl wheat amino acids  
 Sodium stearoamphoacetate  
 Soluble keratin, wheat protein  
 Soyamide DEA  
 Soyamidopropyl benzyldimonium chloride  
 Soyamidopropyl betaine, S. dimethylamine  
 Soyamidopropyl ethyldimonium ethosulfate  
 Soyethyl morpholinium ethosulfate  
 Soyethyldimonium ethosulfate  
 Stearamide MEA  
 Stearamidoethyl diethylamine, ethanolamine  
 Stearamidopropyl benzyldimonium chloride  
 Stearamidopropyl cetearyl dimonium tosylate  
 Stearamidopropyl dimethylamine stearate  
 Stearamidopropyl ethyldimonium ethosulfate  
 Stearamidopropyl morpholine lactate  
 Stearamidopropyl PG-dimonium chloride phosphate  
 Stearmine oxide  
 Steardimonium hydroxypropyl hydrolyzed collagen, keratin  
 Steardimonium panthenol  
 Stearoyl amidoethyl diethylamine  
 Steartrimonium bromide  
 Stearyl dimethicone  
 Tallowamidopropyl dimethylamine  
 Tetramethyl trihydroxy hexadecane  
 TEA-cocoyl hydrolyzed collagen  
 Trachea hydrolysate  
 Tricetylmonium chloride  
 Tridecyl salicylate  
 Triethonium hydrolyzed collagen ethosulfate  
 Wheat germamidopropalkonium chloride  
 Wheat germamidopropyl dimethylamine lactate  
 Wheat germamidopropyl ethyldimonium ethosulfate  
 Wheat peptide  
 Yeast powder, deproteinated  
Coupling agent  
 Acetyl monoethanolamine

- Butyloctanol  
 Myreth-3  
 Oleyl alcohol  
 PPG-10 butanediol  
 5 PPG-10 cetyl ether  
 PPG-10 oleyl ether  
 PPG-15 stearyl ether  
 PPG-22 butyl ether  
 PPG-23 oleyl ether  
 10 PPG-50 oleyl ether  
 Trideceth-7 carboxylic acid
- Denaturant**  
 Brucine sulfate  
 15 Denatonium benzoate, saccharide  
 Nicotine sulfate  
 Sucrose octaacetate  
 Thymol
- 20 **Dental powder**  
 Dicalcium phosphate  
 Silica  
 Sodium monofluorophosphate  
 Stannous fluoride
- 25 **Deodorant**  
 Abietic acid  
 Azadirachta indica extract  
 Chlorophyllin-copper complex  
 30 Eugenia jambolana extract  
 Farnesol  
 Fermented vegetable  
 Mauritia flexosa extract  
 Salvia miltiorrhiza extract  
 35 Sodium aluminum chlorohydroxy lactate  
 Spondias amara extract  
 Triethyl citrate  
 Zinc phenol sulfonate, Z. ricinoleate
- 40 **Depilatory**  
 Barium sulfide  
 Beeswax, oxidized  
 Calcium thioglycolate  
 L-cysteine HCL  
 45 Potassium thioglycolate  
 Sodium thioglycolate  
 Thioglycerin
- 50 **Detergent**  
 Ammonium laureth sulfate  
 Ammonium lauryl sulfate  
 Capramide DEA  
 Cocamidopropyl dimethylamine lactate
- Decyl glucoside  
 Decyltetradeceth-25  
 DEA lauryl sulfate  
 Diamyl sodium sulfosuccinate  
 Dicyclohexyl sodium sulfosuccinate  
 Diisobutyl sodium sulfosuccinate  
 Disodium caproamphodiacetate  
 Disodium caproamphodipropionate  
 Disodium capryloamphodiacetate  
 Disodium capryloamphodipropionate  
 Disodium cetearyl sulfosuccinate  
 Disodium cocamido MEA-sulfosuccinate  
 Disodium cocamido MIPA-sulfosuccinate  
 Disodium cocoamphodipropionate  
 Disodium deceth-6 sulfosuccinate  
 Disodium isodecyl sulfosuccinate  
 Disodium lauramido MEA-sulfosuccinate  
 Disodium lauramido PEG-2 sulfosuccinate  
 Disodium laureth sulfosuccinate  
 Disodium lauroamphodiacetate  
 Disodium lauroamphodipropionate  
 Disodium lauryl sulfosuccinate  
 Disodium myristamido MEA-sulfosuccinate  
 Disodium nonoxynol-10 sulfosuccinate  
 Disodium oleamido PEG-2 sulfosuccinate  
 Disodium PEG-4 cocoamido MIPA-sulfosuccinate  
 Disodium ricinoleamido MEA-sulfosuccinate  
 Disodium tallowiminodipropionate  
 Dodecylbenzene sulfonic acid  
 Dodoxynol-6, -9  
 Isopropylamine dodecylbenzenesulfonate  
 Isostearamidopropyl betaine  
 Isosteareth-6 carboxylic acid  
 Isostearoamphopropionate  
 Isostearyl hydroxyethyl imidazoline  
 Lauramidopropylamine oxide  
 Laureth-11  
 Lauroampho PG-glycinate phosphate  
 Lauryl glucoside, L. phosphate  
 Magnesium laureth sulfate, M. lauryl sulfate  
 Magnesium PEG-3 cocamide sulfate  
 MEA-dodecylbenzenesulfonate  
 MEA-laureth sulfate  
 MEA-lauryl sulfate  
 MIPA-lauryl sulfate  
 Myristamine oxide  
 Myristic acid  
 Nonoxynol-10  
 Oleoamphohydroxypropyl sulfonate  
 Oleth-12, -15  
 Oleyl betaine  
 Palmitamidopropyl betaine

- PEG-10 glyceryl stearate  
 PEG-15 glyceryl stearate  
 PEG-25 glyceryl isostearate  
 Potassium cocoyl hydrolyzed collagen  
 5 Sodium caproamphoacetate  
 Sodium cocoamphoacetate  
 Sodium cocoamphopropionate  
 Sodium cocomonoglyceride sulfate  
 Sodium cocoyl hydrolyzed soy protein  
 10 Sodium cocoyl isethionate  
 Sodium C12-15 pareth-25 sulfate  
 Sodium C14-16 olefin sulfonate  
 Sodium C14-17 alkyl seculfonate  
 Sodium deceth sulfate  
 15 Sodium decyl diphenyl ether sulfonate  
 Sodium dodecylbenzenesulfonate  
 Sodium dodecylidiphenyl ether sulfonate  
 Sodium iodate  
 Sodium laureth-2 sulfate  
 20 Sodium laureth-3 sulfate  
 Sodium laureth-7 sulfate  
 Sodium laureth-12 sulfate  
 Sodium laureth-13-carboxylate  
 Sodium laureth sulfate  
 25 Sodium lauriminodipropionate  
 Sodium lauroamphopropionate  
 Sodium lauroyl methyl alaninate  
 Sodium lauryl phosphate, S.I. sulfate  
 Sodium lauryl sulfoacetate  
 30 Sodium methyl oleoyl taurate  
 Sodium methyl cocoyl taurate  
 Sodium methyl lauroyl taurate  
 Sodium methyl naphthalenesulfonate  
 Sodium myreth sulfate  
 35 Sodium myristyl sulfate  
 Sodium octyl sulfate, oleyl sulfate  
 Sodium POE alkyl ether acetate  
 Sodium trideceth-7 carboxylate  
 Sodium trideceth sulfate  
 40 Sodium tridecyl sulfate  
 Steareth-11, -30  
 TEA-dodecylbenzenesulfonate  
 TEA-laureth sulfate  
 TEA-lauryl sulfate  
 45 TEA-palm kernel sarcosinate  
 TEA-PEG-3 cocamide sulfate  
 Undecylenamidopropyl betaine  
  
**Disinfectant**  
 50 Benzalkonium chloride  
 Chlorophene  
 Didecylmonium chloride  
 Myristalkonium saccharinate

Shikonin  
 Sodium capryloamphoacetate  
 Tea tree (*Melaleuca alternifolia*) oil  
 p-Tertarylphenol

# **Dispersant**

Alkylated polyvinylpyrrolidone  
 C20-40, C30-50, C40-60 alcohols  
 Castor (*Ricinus communis*) oil  
 Cetareth-20  
 Cetyl PPG-2 isodeceth-7 carboxylate  
 Cholesteryl/behenyl/octyldodecyl lauroyl  
 glutamate  
 Decaglycerol monodiolate  
 Diisocetyl dodecanedioate  
 Diisostearyl adipate  
 Dimethicone copolyol methyl ether  
 Dioctyldodecyl dimer dilinoleate  
 Dioctyldodecyl dodecanedioate  
 Ethyl hydroxymethyl oleyl oxazoline  
 Glyceryl caprylate, G. caprylate/caprate  
 Glyceryl diisostearate  
 Hydrogenated castor oil, H. lecithin  
 Hydrogenated tallow glycerides  
 Isobutylene/MA copolymer  
 Isocetyl alcohol  
 Isopropyl C12-15-pareth-9-carboxylate  
 Isostearyl neopentanoate  
 Lanolin acid  
 Laureth-4, -6, -16  
 Melanin  
 Nonoxynol-2, -18, -20, -30, -40  
 Octoxynol-5, -10  
 Octoxynol 16, 30, 40, 70  
 Octyldodeceth-5  
 Octyldodecyl/dimethicone copolyol citrate  
 Oleth-40  
 Oleyl alcohol  
 PEG-5 castor oil, glyceryl sesquiolate  
 PEG-6 beeswax  
 PEG-8/SMDI copolymer  
 PEG-9 castor oil, oleate, stearate  
 PEG-10 dioleate, stearamine  
 PEG-12 beeswax  
 PEG-12 glyceryl dioleate, laurate  
 PEG-15 castor oil  
 PEG-20 almond glycerides  
 PEG-20 glyceryl isostearate  
 PEG-20 sorbitan triisostearate  
 PEG-25 castor oil  
 PEG-30 dipolyhydroxystearate  
 PEG-40 hydrogenated castor oil PCA isostearate  
 PEG-60 shea butter glycerides

- Poloxamer 101, 122, 181, 182, 184  
 Polyglyceryl-2 sesquiossearate  
 Polyglyceryl-3 diisostearate, oleat  
 Polyglyceryl-5 distearate  
 5 Polyglyceryl-6 mixed fatty acids  
 Polyglyceryl-10 diisostearate, distearate  
 Polyglyceryl-10 decaoleate  
 Polyhydroxystearic acid  
 Polysorbate 40, 80  
 10 Potassium polyacrylate  
 PPG-3 PEG-6 oleyl ether  
 PPG-9 diethylmonium phosphate  
 PPG-12/SMDI Copolymer  
 PPG-15 stearyl ether  
 15 PPG-25, PPG-40 diethylmonium chloride  
 PPG-51/SMDI Copolymer  
 PVP/eicosene copolymer  
 PVP/hexadecene copolymer  
 Rapeseed oil, ethoxylated high erucic acid  
 20 Ricinoleyl alcohol  
 Sodium ceteth-13-carboxylate  
 Sodium lignosulfonate, S. polymethacrylate  
 Sodium polynaphthalenesulfonate  
 Sorbitan oleate  
 25 Steareth-10  
 Tricontanyl PVP  
 Triisostearin PEG-6 esters  
 Trioctylododecyl citrate  
 30 **Emollient**  
 Acetylated glycol stearate  
 Acetylated hydrogenated lanolin  
 Acetylated hydrogenated lard glyceride  
 Acetylated hydrogenated vegetable glyceride  
 35 Acetylated lanolin, A.I. alcohol  
 Acetylated lard glyceride  
 Acetylated monoglycerides  
 Acetylated palm kernel glycerides  
 Aleurites moluccana ethyl ester  
 40 Allantoin  
 Aluminum/magnesium hydroxide stearate  
 AMP-isostearoyl hydrolyzed soy protein  
 Apricot (*Prunus armeniaca*) kernel oil  
 Arachidyl behenate  
 45 Argania spinosa oil  
 Avocado (*Persea gratissima*) oil, unsaponifiables  
 Avocado oil ethyl ester  
 Babassu (*Orbignya oleifera*) oil  
 Batyl isostearate, B. stearate  
 50 Behenamidopropyl dihydroxypropyl dimonium  
 chloride  
 Behenoxy dimethicone  
 Behenyl alcohol, B. behenate  
 Behenyl erucate, B. isostearate  
 Benzyl laurate  
 Bladderwrack (*Fucus vesiculosus*) extract  
 Borage (*Borago officinalis*) seed oil  
 Borageamidopropyl phosphatidyl PG-dimonium  
 chloride  
 Brain extract  
 Brazil nut (*Bertholletia excelsa*) oil  
 Butyl myristate, oleate, stearate  
 Butyloctanol  
 Butyloctyl oleate  
 C12-13, C12-16, C14-15 alcohols  
 C12-15 alcohols octanoate  
 C12-15 alkyl benzoate  
 dl-C12-15 alkyl fumarate  
 C12-15 alkyl lactate  
 Camellia kissi oil  
 Tea (*Camellia sinensis*) oil  
 C10-30 cholesterol/lanostearol esters  
 Canola oil  
 Caprylic/capric triglyceride  
 Caprylic/capric triglyceride PEG-4 esters  
 Caprylic/capric/lauric triglyceride  
 Caprylic/capric/linoleic triglyceride  
 Caprylic/capric/oleic triglycerides  
 Caprylic/capric/stearic triglyceride  
 Caprylic/capric/succinic triglyceride  
 Capsicum frutescens oleoresin  
 Carrot (*Daucus carota sativa*) oil  
 Cashew (*Anacardium occidentale*) nut oil  
 Castor (*Ricinus communis*) oil  
 Cetearyl behenate, C. candelillate  
 Cetearyl isononanoate, C. octanoate  
 Cetearyl palmitate, C. stearate  
 Ceteth-10  
 Cetostearyl stearate  
 Cetyl C12-15 pareth-9 carboxylate  
 Cetyl acetate, C. alcohol  
 Cetyl esters, C. lactate  
 Cetyl myristate, C. octanoate  
 Cetyl oleate, C. palmitate  
 Cetyl PPG-2 isodeceth-7 carboxylate  
 Cetyl ricinoleate, C. stearate  
 Cetyl stearyl octanoate  
 Chia (*Salvia hispanica*) oil  
 Cholesteric esters  
 Cholesterol  
 Cholesteryl/beheryl/octyldodecyl lauroyl  
 glutamate  
 Cholesteryl hydroxystearate  
 Cholesteryl stearate  
 Choleth-24  
 C18-70 Isoparaffin

- |    |   |  |  |
|----|---|--|--|
|    | C10-18, C12-18 triglycerides  |  | Diocetyl cyclohexane                                       |
|    | C12-15 linear alcohols 2-ethylhexanoate   |  | Diocetyldodecyl dimer dilinoleate                          |
|    | Cocamidopropyl PG-dimonium chloride   |  | Diocetyldodecyl dodecanedioate                             |
|    | Cocoa ( <i>Theobroma cacao</i> ) butter   |  | Diocetyl malate, D. sebacate, succinate                    |
| 5  | Coco-caprylate/caprate  |  | Dipentaerythritol fatty acid ester                         |
|    | Coco-rape seedate   |  | Dipentaerythrityl hexacaprylate/hexacaprate                |
|    | Coconut ( <i>Cocos nucifera</i> ) oil   |  | Dipentaerythrityl hexahydroxystearate/isostearate          |
|    | Cocoyl hydrolyzed soy protein   |  | Distearyldimethylamine dilinoleate                         |
|    | Collagen hthalate   |  | Ditridecyl adipate   |
| 10 | Colloidal oatmeal   |  | Dog rose ( <i>Rosa canina</i> ) hips oil                   |
|    | Comfrey ( <i>Symphytum officinale</i> ) leaf extract                              |  | Egg (Ovum) yolk extract                                    |
|    | Corn ( <i>Zea mays</i> ) oil  |  | Emu ( <i>Dromiceius</i> ) oil                              |
|    | Corn poppy ( <i>Papaver rhoeas</i> ) extract                                      |  | Erucyl erucate   |
|    | Cottonseed ( <i>Gossypium</i> ) oil   |  | Ethyl avocadate  |
| 15 | Cuttlefish extract  |  | Ethylhexyl isopalmitate                                    |
|    | Cyclomethicone  |  | 2-Ethylhexyl isostearate                                   |
|    | Deceth-4 phosphate  |  | Ethyl linoleate, E. minkate                                |
|    | Decyl oleate  |  | Ethyl morrhuate, E. myristate                              |
|    | Decyltetradecanol   |  | Ethyl oleate, E. olivate                                   |
| 20 | Dialkydimethylpolysiloxane  |  | Evening primrose ( <i>Oenothera biennis</i> ) extract, oil |
|    | Dibutyl sebacate  |  | Glycereth-4,5-lactate                                      |
|    | Dicapryl adipate  |  | Glycereth-5 lactate  |
|    | Dicaprylyl ether, D. maleate  |  | Glycereth-7 benzoate                                       |
|    | Diethylene glycol diisononanoate  |  | Glycereth-7 diisononanoate                                 |
| 25 | Diethylene glycol dioctanoate   |  | Glycereth-7 triacetate                                     |
|    | bis-Diglyceryl/caprylate/caprate/isostearate/<br>hydroxystearate/adipate          |  | Glycereth-7 trioctanoate                                   |
|    | bis-Diglyceryl/caprylate/caprate/isostearate/<br>stearate/hydroxystearate/adipate |  | Glycereth-12, -26  |
| 30 | Dihydroabietyl behenate   |  | Glycerol tricaprylate/caprate                              |
|    | Dihydroxyethyl tallowamine oleate   |  | Glyceryl adipate, G. dioleate                              |
|    | Diisobutyl adipate  |  | Glyceryl isostearate, G. lanolate                          |
|    | Diisocetyl adipate, dodecanedioate  |  | Glyceryl linoleate, G. monopyroglutamate                   |
|    | Diisodecyl adipate  |  | Glyceryl myristate, G. oleat                               |
| 35 | Diisopropyl adipate, dimer dilinoleate  |  | Glyceryl ricinoleate                                       |
|    | Diisopropyl sebacate  |  | Glyceryl triacetyl hydroxystearate                         |
|    | Diisostearoyl trimethylolpropane siloxy silicate                                  |  | Glyceryl triacetyl ricinoleate                             |
|    | Diisostearyl adipate  |  | Glycosaminoglycans   |
|    | Diisostearyl dimer dilinoleate  |  | Glycosophingolipids  |
| 40 | Diisostearyl fumarate, D. malate  |  | Gold of Pleasure oil                                       |
|    | Dilinoleic acid   |  | Grape ( <i>Vitis vinifera</i> ) seed oil                   |
|    | Dimethicone   |  | Hazel ( <i>Corylus avellana</i> ) nut oil                  |
|    | Dimethicone copolyol  |  | Helianthus annuum ethyl ester                              |
|    | Dimethicone copolyol acetate, D.c. almondate                                      |  | Hexadecyl isopalmitate                                     |
| 45 |   |  | Hexamethyldisiloxane                                       |
|    | Dimethicone copolyol isostearate, D.c. lactate                                    |  | hexyl laurate  |
|    | Dimethicone copolyol methyl ether   |  | hexyldecanol   |
|    | Dimethicone copolyol phthalate  |  | Hexyldecyl stearate  |
|    | Dimethicone propylethylenediamine bebenate  |  | honey extract  |
| 50 | Dimethiconol stearate   |  | Hybrid safflower ( <i>Carthamus tinctorius</i> ) oil       |
|    | Dimethyl lauramine oleate   |  | Hybrid sunflow ( <i>Helianthus annus</i> ) oil             |
|    | Diocetyl adipate  |  | Hydrogenated C6-14 olefin polymers                         |
|    | Diocetyl dimer dilinoleate  |  | Hydrogenated castor oil                                    |
|    |   |  | Hydrogenated castor oil laurate                            |
|    |   |  | hydrogenated coconut oil                                   |

-71-

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|----|--|--|
|    | Neopentyl glycol dicaprate                               | PEG-15 cocamine oleate/phosphate                   |
|    | Neopentyl glycol dicaprate/dicaprylate                   | PEG-18   |
|    | Neopentyl glycol diisooctanoate                          | PEG-20   |
|    | Neopentyl glycol dioctanoate                             | PEG-20 hydrogenated castor oil isostearate         |
| 5  | Oat ( <i>Avena sativa</i> ) bran extract, extract, flour | PEG-20 hydrogenated castor oil triisostearate      |
|    | Octacosanyl stearate                                     | PEG-20 hydrogenated lanolin                        |
|    | Octyl cocoate  | PEG-24 hydrogenated lanolin                        |
|    | Octyl hydroxystearate, O. isononanoate                   | PEG-25 PABA, P. propylene glycol stearate          |
|    | Octyl neopentanoate, O. octanoate                        | PEG-40 glyceryl laurate                            |
| 10 | Octyl oleate, O. palmitate                               | PEG-40 hydrogenated castor oil isostearate         |
|    | Octyl pelargonate, O. stearate                           | PEG-40 hydrogenated castor oil laurate             |
|    | Octyldecanol   | PEG-40 hydrogenated castor oil triisostearate      |
|    | Octyldodecanol   | PEG-40 jojoba oil                                  |
|    | Octyldodecyl behenate, O. benzoate                       | PEG-50 hydrogenated castor oil laurate             |
| 15 | Octyldodecyl erucate, O. myristate                       | PEG-50 hydrogenated castor oil triisostearate      |
|    | Octyldodecyl oleate, O. ricinoleate                      | PEG-60 shea butter glycerides                      |
|    | Octyldodecyl stearate                                    | PEG-70 mango glycerides                            |
|    | bis-Octyldodecyl stearoyl dimer dilinoleate              | PEG-75   |
|    | Octyldodecyl stearoyl stearate                           | PEG-75 lanolin, P. shea butter glycerides          |
| 20 | Oleamine oxide   | PEG-75 shorea butter glycerides                    |
|    | Oleic/palmitoleic/linoleic glycerides                    | PEG-150  |
|    | Oleic alcohol  | PEG/PPG-17/6 copolymer                             |
|    | Oleostearine   | Pentaerythrityl dioleate                           |
|    | Oleyl alcohol, O. erucate, O. oleate                     | Pentaerythrityl                                    |
| 25 | Olive ( <i>Olea europaea</i> ) oil                       | isostearate/caprate/caprylate/adipate              |
|    | Orange ( <i>Citrus aurantium dulcis</i> ) peel wax       | Pentaerythrityl stearate                           |
|    | Orange roughly ( <i>Hoplostethus atlanticus</i> ) oil    | Pentaerythrityl stearate/caprate/caprylate/adipate |
|    | Palm ( <i>Elaeis guineensis</i> ) oil                    | Pentaerythrityl tetracaprylate/tetracaprate        |
|    | Palm kernel glycerides                                   | Pentaerythrityl tetraisononanoate, P.              |
| 30 | Palmitic acid  | tetraisostearate                                   |
|    | Panthenyl triacetate                                     | Pentaerythrityl tetralaurate, P. tetraoctanoate    |
|    | Partially hydrogenated canola oil                        | Pentaerythrityl tetraoleate, P. tetrapelargonate   |
|    | Partially hydrogenated soybean oil                       | Pentaerythrityl tetrastearate                      |
|    | Peach ( <i>Prunus persica</i> ) extract                  | Perfluorodecalin                                   |
| 35 | Peanut ( <i>Arachis hypogaea</i> ) oil                   | Perfluoropolymethylisopropyl ether                 |
|    | PEG-2 diisononanoate, P. dioctanoate                     | Petrolatum   |
|    | PEG-2 milk solids  | Phenethyl dimethicone                              |
|    | PEG-4  | Phenyl dimethicone, P. methicone, P.               |
|    | PEG-4 diheptanoate, P. dilaurate                         | trimethicone                                       |
| 40 | PEG-5 C8-12 alcohols citrate                             | Phytantriol  |
|    | PEG-5 C14-18 alcohols citrate                            | Pistachio ( <i>Pistacia vera</i> ) nut oil         |
|    | PEG-5 hydrogenated castor oil                            | Placental enzymes                                  |
|    | PEG-5 hydrogenated castor oil triisostearate             | Pollen extract                                     |
|    | PEG-6  | Poloxamer 105 benzoate                             |
| 45 | PEG-6 capric/caprylic glycerides                         | Poloxamer 182 dibenzoate                           |
|    | PEG-7 glyceryl cocoate                                   | Polybutene   |
|    | PEG-8  | Polydecene   |
|    | PEG-8 dilaurate, P. dioleate                             | Polydimethicone copolyol                           |
|    | PEG-8/SMDI copolymer                                     | Polyethylene glycol                                |
| 50 | PEG-9 stearyl stearate                                   | Polyglyceryl-2 diisostearate, P. tetraisostearate  |
|    | PEG-10 stearyl stearate                                  | Polyglyceryl-2 triisostearate                      |
|    | PEG-12   | Polyglyceryl-3 diisostearate, P. oleate            |
|    | PEG-12 dioleate, P. palm kernel glycerides.              | Polyglyceryl-3 stearate                            |



- Polyglyceryl-6 dioleate  
 Polyglyceryl-10 decaoleate, P. decastearate  
 Polyglyceryl-10 tetraoleate  
 Polyisobutene  
 5 Polyisobutene/isoheptapentacontahexane  
 Polyisobutene/isooctabexacontane  
 Polyisobutene/isopentacontaoctane  
 Polyisoprene  
 Polyoxyethylene polyoxypropylene glycol  
 10 Polyquaternium-2  
 Polysiloxane polyalkylene copolymer  
 Polysorbate 40  
 Potassium dimethicone copolyol phosphate  
 PPG-2-buteth-3  
 15 PPG-2 lanolin alcohol ether  
 PPG-2 myristyl ether propionate  
 PPG-3 hydrogenated castor oil  
 PPG-3 myristyl ether  
 PPG-5-buteth-7  
 20 PPG-5-laureth-5  
 PPG-5 butyl ether  
 PPG-5 lanolin wax  
 PPG-5 pentaerythrityl ether  
 PPG-7-buteth-10  
 25 PPG-8/SMDI copolymer  
 PPG-9  
 PPG-9-buteth-12  
 PPG-9 butyl ether  
 30 PPG-10 butanediol, P. cetyl ether  
 PPG-10 methyl glucose ether  
 PPG-10 oleyl ether  
 PPG-11 stearyl ether  
 PPG-12-buteth-16  
 35 PPG-12-PEG-50 lanolin  
 PPG-12-PEG-65 lanolin oil  
 PPG-12/SMDI Copolymer  
 PPG-14 butyl ether  
 PPG-15 butyl ether, P. stearyl ether  
 40 PPG-15 stearyl ether benzoate  
 PPG-16 butyl ether  
 PPG-18 butyl ether  
 PPG-20  
 PPG-20-buteth-30  
 45 PPG-20 cetyl ether  
 PPG-24-glycereth-24  
 PPG-26  
 PPG-27 glyceryl ether  
 PPG-28-buteth-35  
 50 PPG-30  
 PPG-30 cetyl ether  
 PPG-40 butyl ether  
 PPG-50 cetyl ether, P. oleyl ether  
 PPG-51/SMDI Copolymer  
 PPG-53 butyl ether  
 Propylene glycol ceteth-3 acetate  
 Propylene glycol dicaprylate  
 Propylene glycol dicaprylate/dicaprate  
 Propylene glycol diisostearate, P.g. dioctanoate  
 Propylene glycol dipeargonate  
 Propylene glycol isoceteth-3-acetate  
 Propylene glycol isostearate, P.g. laurate  
 Propylene glycol myristate  
 Propylene glycol myristyl ether acetate  
 Propylene glycol stearate, SE  
 Pumpkin (Cucurbita pepo) seed oil  
 Quinoa (Chenopodium quinoa) oil  
 Rapeseed (Brassica campestris) oil  
 Rice (Oryza sativa bran oil, bran wax  
 Rice fatty acid  
 Safflower (Carthamus tinctorius) oil  
 Salmon (Salmo) egg extract  
 Sesame (Sesamum indicum) oil  
 Shark liver oil  
 Shea butter (Butyrospermum parkii)  
 Shea butter (Butyrospermum parkii) extract  
 Shea butter, ethoxylate  
 Shorea stenoptera butter  
 Silybum marianum ethyl ester  
 Sitostearyl acetate  
 Skin lipids  
 Slippery elm extract  
 Sodium C8-16 isoalkylsuccinyl lactoglobulin  
 sulfonate  
 Sodium carboxymethyl beta-glucan  
 Sodium ceteth-13-carboxylate  
 Sodium dimethicone copolyol acetyl  
 methylaurate  
 Sodium glyceryl oleate phosphate  
 Sodium hyaluronate, S. polymethacrylate  
 Sorbeth-20  
 Sorbitan isostearate, S. palmitate  
 Sorbitan sesquioleate, S. sesquisteate  
 Sorbitan trioleate  
 Soybean (Glycine soja) oil  
 Spermaceti  
 Sphingolipids  
 Squalene  
 Stearamidopropyl cetearyl dimonium tosylate  
 Steareth-4 stearate  
 Stearic acid, S. hydrazide  
 Stearoxy dimethicone  
 Stearoxymethicone/dimethicone copolymer  
 Stearyl behenate, S. benzoate  
 Stearyl dimethicone, S. erucate  
 Stearyl heptanoate, S. propionate

- Stearyl stearate  
 Stearyl stearoyl stearate  
 Sucrose cocoate  
 Sunflower (*Helianthus annuus*) seed oil  
 5 Sweet almond (*Prunus amygdalus dulcis*) oil  
 Sweet cherry (*Prunus avium*) pit oil  
 Synthetic jojoba oil  
 Synthetic wax  
 Tallow  
 10 Tetradecylcyclosyl stearate  
 Tocopheryl acetate  
 Tricaprin  
 Tricaprylin  
 Tricaprylyl citrate  
 15 *Tricholoma matsutake* extract  
 Tridecyl behenate, T. cocoate  
 Tridecyl erucate, T. neopentanoate  
 Tridecyl octanoate, T. stearate  
 Tridecyl stearoyl stearate  
 20 Tridecyl trimellitate  
 Trihexyldecyl citrate  
 Triisocetyl citrate  
 Triisostearin  
 Triisostearyl citrate  
 25 Triisostearyl trilinoleate  
 Trilaurin  
 Trilinolein  
 Trimethylolpropane tricaprilate/tricaprate  
 Trimethylolpropane tricocoate  
 30 Trimethylolpropane trilaurate  
 Trimyrustin  
 Trioctanoin  
 Trioctyldodecyl citrate  
 Triolein  
 35 Tripalmitin  
 Tripropylene glycol citrate  
 Tristearin  
 Triundecanoin  
 Vegetable oil  
 40 Walnut (*Juglans regia*) oil  
 Wheat (*Triticum vulgare*) germ oil  
  
**Emulsifier**  
 Acetylated hydrogenated lard glyceride  
 45 Acetylate hydrogenated vegetable glyceride  
 Acetylated monoglycerides  
 Acrylates/C10-C30 alkyl acrylate crosspolymer  
 Acrylates/vinyl isodecanoate crosspolymer  
 Acrylic acid/acrylonitrogens copolymer  
 50 2-Aminobutanol  
 Ammonium acrylates/acrylonitrogens copolymer  
 Arachidyl alcohol  
 Beeswax  
 Behenamidopropyl dihydroxypropyl dimonium  
 chloride  
 Beheneth-5, -10, -20, -30  
 Behenic acid  
 Behenyl betain  
 Borageamidopropyl phosphatidyl PG-dimonium  
 chloride  
 Butyloctanol  
 C12-20 acid PEG-8 ester  
 C18-36 acid  
 Calcium dodecylbenzene sulfonate  
 Calcium protein complex  
 Calcium stearate  
 Calcium stearoyl lactylate  
 Capramide DEA  
 Caprylic/capric acid  
 Caprylic/capric glycerides  
 Castor oil, ethoxylate  
 Cetalkonium chloride  
 Ceteareth-2 -4 -5 -6  
 Ceteareth-2 phosphate  
 Ceteareth-5 phosphate  
 Ceteareth-8 -10 -11 -12  
 Ceteareth-10 phosphate  
 Ceteareth-15 -17 -20 -25  
 Ceteareth-27 -29 -30 -34  
 Cetearyl alcohol  
 Cetearyl glucoside  
 Ceteth-2 -4 -6 -10 -12 -13  
 Ceteth-16 -20 -25 -30 -33  
 Cetethyldimonium bromide  
 Cetrimonium chloride  
 Cetyl dimethicone copolyol  
 Cetyl phosphate  
 Cholesterol  
 Choleth-10 -15 -24  
 Cocamide DEA, C. MEA  
 Cocamidopropyl dimethylamine  
 Cocamidopropyl PG-dimonium chloride  
 phosphate  
 Cocamine  
 Coceth-7 carboxylic acid  
 Coconut acid  
 Copper protein complex  
 Cottonseed glyceride  
 C12-13 pareth-3 -4 -9 -23  
 C16-18 pareth-3 -5.5 -13 -19  
 Cyclodextrin  
 Decaglycerol monodiolate  
 DEA-ceteareth-2-phosphate  
 DEA-cetyl phosphate  
 DEA-cyclocarboxypropylolate  
 DEA-oleth-3-phosphate

- 5 DEA-oleth-5-phosphate  
 DEA oleth-10 phosphate  
 DEA-oleth-20-phosphate  
 Dicitareth-10 phosphoric acid  
 Diethanolamine  
 Diethylaminoethyl stearate  
 Diglyceryl stearate maleate  
 Dihydrocholeth-15 -20 -30  
 Dihydrogenated tallow phthalic acid amide  
 10 Dilauryl acetyl dimonium chloride  
 Dilinoleamidopropyl dimethylamine dimethicone  
 copolyol phosphate  
 Dilinoleic acid  
 Dimethicone copolyol almondate  
 15 Dimethicone copolyol isostearate  
 Dimethicone copolyol laurate  
 Dimethicone copolyol methyl ether  
 Dimethicone copolyol olivate  
 Dimethicone copolyol phthalate  
 20 Dipalmitoylethyl hydroxyethylmonium  
 methosulfate  
 Dipropylene glycol  
 Disodium hydrogenated cottonseed glyceride  
 sulfosuccinate  
 25 Disodium ricinoleamido MEA-sulfosuccinate  
 Disodium stearyl sulfosuccinate  
 Disodium sulfosuccinamide  
 Distearyl phthalic acid amide  
 N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate)  
 30 ammonium chloride  
 Dodecylphenol-ethylene oxide condensate  
 Egg (Ovum) yolk extract  
 Emulsifying wax NF  
 Ethoxylated fatty alcohol  
 35 N-Ethylether-bis-1,4-(N-isostearylamidopropyl-  
 N,N-dimethyl ammonium chlo  
 Ethyl hexanediol  
 Euglena gracilis polysaccharide  
 Glycereth-26 phosphate  
 40 Glyceryl caprylate, G. caprylate/caprate  
 Glyceryl citrate/lactate/linoleate/oleate  
 Glyceryl cocoate, G. dilaurate  
 Glyceryl dilaurate, G. dioleate  
 Glyceryl distearate, G. hydroxystearate  
 45 Glyceryl isostearate, G. lanolate  
 Glyceryl laurate, G. linoleate  
 Glyceryl mono-di-tri-caprylate  
 Glyceryl myristate, G. oleate  
 Glyceryl palmitate, G. ricinoleate  
 50 Glyceryl ricinoleate SE  
 Glyceryl stearate, G. stearate citrate  
 Glyceryl stearate lactate  
 Glyceryl stearate SE  
 Glyceryl undecylenate  
 Glycol distearate, G. oleate  
 Glycol palmitate, G. stearate  
 Glycol stearate SE  
 Glycolamide stearate  
 Glycosphingolipids  
 Hydrogenated coco-glycerides  
 Hydrogenated cottonseed glyceride  
 Hydrogenated lanolin  
 Hydrogenated lecithin  
 Hydrogenated palm oil  
 Hydrogenated soy glyceride  
 Hydrogenated tallow glycerides  
 Hydrogenated tallow glycerides citrate  
 Hydroxycetyl phosphate  
 Hydroxylated lanolin  
 Hydroxylated lecithin  
 Hydroxyoctacosanyl hydroxystearate  
 Hydroxypropyl-bis-  
 isostearylamidopropyldimonium chloride  
 Isocetareth-8 stearate  
 Isoceteth-10 stearate  
 Isoceteth-20  
 Isocetyl alcohol  
 Isolaureth-6  
 Isostearamidopropyl dimethylamine gluconate  
 Isostearamidopropyl dimethylamine glycolate  
 Isostearamidopropyl laurylacetodimonium  
 chloride  
 Isosteareth-2 -3 -10 -12 -20 -22 -50  
 Isosteareth-2-octanoate  
 Isosteareth-10 stearate  
 Isostearic acid  
 isostearyl diglyceryl succinate  
 Isostearylamidopropyl dihydroxypropyl  
 dimonium chloride  
 Karaya (Stericulia urens) gum  
 Laneth-5 -10 -15 -16 -20 -40  
 Laneth-10 acetate  
 Lanolin  
 Lanolin alcohol  
 Lanolin, ultra anhydrous  
 Lanolin wax  
 Lauramide DEA, L. MEA  
 Lauramidopropyl dimethylamine  
 Lauramidopropyl PG-dimonium chloride  
 Laureth-1 -2 -3 -4 -5  
 Laureth-2-octanoate  
 Laureth-3 phosphate  
 Laureth-4 carboxylic acid  
 Laureth-5 carboxylic acid  
 Laureth-6 -7 -9 -11 -12  
 Laureth-11 carboxylic acid

- Laureth-16 -20 -23 -25 -30  
 Lauryl PCA  
 Laurylmethicone copolyol  
 Lecithin  
 5. Linoleamidopropyl PG-dimonium chloride phosphate  
 Lithium stearate  
 Magnesium sulfate hepta-hydrate  
 Maleated soybean oil  
 10 Methoxy PEG-17/dodecyl glycol copolymer  
 Methyl gluceth-20 distearate  
 methyl glucose dioleate, M.g. sesquiosstearate  
 Methyl glucose sesquistearate  
 MEA-laureth sulfate  
 15 Myreth-3 -4 -7  
 Myreth-3 myristate  
 Myristamidopropyl dimethylamine  
 Nonoxynol-1 -2 -4 -5 -6 -7  
 Nonoxynol-8 -9 -10 -11 -12 -13  
 20 Nonoxynol-14 -15 -18 -20 -30 -40 -50  
 Nonyl nonoxynol-5 -10  
 Oat (Avena sativa) flour  
 Octoxynol-1 -3 -5 -8 -10  
 Octoxynol 16, 30, 40  
 25 2-Octyl dodecyl alcohol  
 Octyldodecanol  
 Octyldodeceth-20 -25  
 Oleamide DEA  
 Oleamidopropyl dimethylamine  
 30 Oleamine oxide  
 Oleic acid  
 Oleth-2 -3 -4 -5 -6 -7 -8 -9  
 Oleth-10 -12 -15 -20 -23  
 Oleth-25 -30 -40 -50  
 35 Oleth 13  
 Oleth-2 phosphate  
 Oleth-3 phosphate  
 Oleth-5 phosphate  
 Oleth-10 phosphate  
 40 Oleth-20 phosphate  
 Palm acid  
 Palmitamidopropyl dimethylamine  
 Palmitic acid  
 PEG-2 cocamine, P. distearate  
 45 PEG-2 hydrogenated tallow amine  
 PEG-2 laurate, P. laurate SE  
 PEG-2 oleamine, P. oleate  
 PEG-2 soyamine, P. stearamine  
 PEG-2 stearate, P. stearate SE  
 50 PEG-3 cocamide  
 PEG-3 C12-C18 alcohols  
 PEG-3 glyceryl isostearate  
 PEG-3 glyceryl triisostearate  
 PEG-3 glyceryl tristearate  
 PEG-3 lanolate, P. sorbitan oleate  
 PEG-3 stearate  
 PEG-4 dioleate, P. diisostearate  
 PEG-4 dilaurate, P. distearate  
 PEG-4 glyceryl distearate  
 PEG-4 laurate, P. oleate  
 PEG-4 stearate  
 PEG-4 stearyl stearate  
 PEG-4 tallate  
 PEG-5 castor oil, P. cocamine  
 PEG-5 C12-C18 alcohols  
 PEG-5 glyceryl isostearate  
 PEG-5 glyceryl sesquioleate  
 PEG-5 glyceryl stearate  
 PEG-5 glyceryl triisostearate  
 PEG-5 lanolate, P. oleamine  
 PEG-5 soy sterol, P. soyamine  
 PEG-5 stearamine, P. stearate  
 PEG-5 tallow amine  
 PEG-6 capric/caprylic glycerides  
 PEG-6 cocamide  
 PEG-6 C12-14 ether  
 PEG-6 dilaurate, P. dioleate  
 PEG-6 distearate, P. isostearate  
 PEG-6 lauramide, P. laurate  
 PEG-6 oleate, P. palmitate  
 PEG-6 sorbitan beeswax  
 PEG-6 sorbitan laurate  
 PEG-6 sorbitan oleate  
 PEG-6 sorbitan stearate  
 PEG-6 stearate  
 PEG-6-32  
 PEG-6-32 stearate  
 PEG-7 glyceryl cocoate  
 PEG-7 hydrogenated castor oil  
 PEG-7 oleate  
 PEG-7.5 tallowamine  
 PEG-8  
 PEG-8 beeswax, P. castor oil  
 PEG-8 C12-14 ether  
 PEG-8 dilaurate, P. dioleate  
 PEG-8 distearate  
 PEG-8 glyceryl laurate  
 PEG-8 laurate, P. oleate  
 PEG-8, P. tallate  
 PEG-9 castor oil  
 PEG-9 diisostearate  
 PEG-9 dioleate, P. distearate  
 PEG-9 laurate, P. oleate  
 PEG-9 stearate  
 PEG-10 castor oil, P. cocamine  
 PEG-10 coconut oil esters

- PEG-10 C12-18 alcohols  
 PEG-10 dioleate  
 PEG-10 glyceryl isostearate  
 PEG-10 hydrogenated castor oil  
 5 PEG-10 hydrogenated castor oil triisostearate  
 PEG-10 lanolate  
 PEG-10 polyglyceryl-2 laurate  
 PEG-10 sorbitan laurate  
 PEG-10 soy sterol, P. stearamine  
 10 PEG-10 stearate  
 PEG-11 babassu glycerides  
 PEG-11 castor oil  
 PEG-12 dilaurate, P. dioleate  
 PEG-12 distearate  
 15 PEG-12 glyceryl dioleate  
 PEG-12 laurate, P. oleate  
 PEG-12 stearate, P. tallate  
 PEG-14 avocado glycerides  
 PEG-15 castor oil  
 20 PEG-15 cocamine  
 PEG-15 glyceryl isostearate  
 PEG-15 glyceryl laurate  
 PEG-15 glyceryl ricinoleate  
 PEG-15 oleamine, P. oleate  
 25 PEG-15, P. stearamine  
 PEG-15 tallow amine  
 PEG-15 tallow polyamine  
 PEG-16  
 PEG-16 hydrogenated castor oil  
 30 PEG-16 soy sterol  
 PEG-18 stearate  
 PEG-20 almond glycerides  
 PEG-20 castor oil, P. dilaurate  
 PEG-20 dioleate, P. distearate  
 35 PEG-20 glyceryl laurate  
 PEG-20 glyceryl oleate  
 PEG-20 glyceryl stearate  
 PEG-20 glyceryl triisostearate  
 PEG-20 glyceryl tristearate  
 40 PEG-20 hydrogenated castor oil  
 PEG-20 hydrogenated lanolin  
 PEG-20 lanolin, P. laurate  
 PEG-20 oleate  
 PEG-20 methyl glucose sesquistearate  
 45 PEG-20 sorbitan beeswax  
 PEG-20 sorbitan isostearate  
 PEG-20 sorbitan triisostearate  
 PEG-20 sorbitan trioleate  
 PEG-20 stearate, P. tallow amine  
 50 PEG-23 oleate, P. stearate  
 PEG-24 hydrogenated lanolin  
 PEG-25 castor oil  
 PEG-25 phytosterol  
 PEG-25 propylene glycol stearate  
 PEG-25 soy sterol, P. stearate  
 PEG-29 castor oil  
 PEG-30 castor oil  
 PEG-30 dipolyhydroxystearate  
 PEG-30 glyceryl cocoate  
 PEG-30 glyceryl isostearate  
 PEG-30 glyceryl laurate  
 PEG-30 glyceryl oleate  
 PEG-30 glyceryl stearate  
 PEG-30 hydrogenated castor oil  
 PEG-30 lanolin  
 PEG-30 sorbitan tetraoleate  
 PEG-32 dilaurate, P. dioleate  
 PEG-32 distearate, P. laurate  
 PEG-32 oleate, P. stearate  
 PEG-33 castor oil  
 PEG-35 castor oil, P. stearate  
 PEG-40 castor oil  
 PEG-40 glyceryl isostearate  
 PEG-40 glyceryl laurate  
 PEG-40 glyceryl triisostearate  
 PEG-40 hydrogenated castor oil  
 PEG-40 hydrogenated castor oil PCA isostearate  
 PEG-40 sorbitan diisostearate  
 PEG-40 sorbitan lanolate  
 PEG-40 sorbitan tetraoleate  
 PEG-40 stearate  
 PEG-40/dodecyl glycol copolymer  
 PEG-42 babassu glycerides  
 PEG-44 sorbitan laurate  
 PEG-45 palm kernel glycerides  
 PEG-45 safflower glycerides  
 PEG-50 lanolin, P. stearamine  
 PEG-50 stearate  
 PEG-60 almond glycerides  
 PEG-60 castor oil  
 PEG-60 corn glycerides  
 PEG-60 glyceryl triisostearate  
 PEG-60 hydrogenated castor oil  
 PEG-60 hydrogenated castor oil isostearate  
 PEG-60 hydrogenated castor oil triisostearate  
 PEG-60 shea butter glycerides  
 PEG-60 sorbitan tetraoleate  
 PEG-70 mango glycerides  
 PEG-75  
 PEG-75 castor oil, P. dilaurate  
 PEG-75 dioleate, P. distearate  
 PEG-75 lanolin, P. laurate  
 PEG-75 oleate  
 PEG-75 shea butter glycerides  
 PEG-75 shorea butter glycerides  
 PEG-75 stearate

- PEG-80 sorbitan laurate  
 PEG-90 stearate  
 PEG-100 castor oil  
 PEG-100 hydrogenated castor oil  
 5 PEG-100 lanolin, P. stearate  
 PEG-120 distearate  
 PEG-150 dilaurate, P. dioleate  
 PEG-150 distearate, P. lanolin  
 PEG-150 laurate, P. oleate  
 10 PEG-150 stearate  
 PEG-200 castor oil  
 PEG-200 glyceryl stearate  
 PEG-200 hydrogenated castor oil  
 PEG-200 laurate, P. oleate  
 15 PEG-400 laurate  
 Phosphate esters  
 Phosphated amine oxides  
 Phospholipids  
 Poloxamer 101, 105, 122, 123, 124  
 20 Poloxamer 181, 182, 184, 185, 235, 237  
 Poloxamer 238, 334, 338, 407  
 Polyglyceryl-2 oleate  
 Polyglyceryl-2 polyhydroxystearate  
 Polyglyceryl-2 sesquiisostearate  
 25 Polyglyceryl-2 stearate  
 Polyglyceryl-2-PEG-4-distearate  
 Polyglyceryl-2-PEG-4-stearate  
 Polyglyceryl-3 diisostearate, P. dioleate  
 Polyglyceryl-3 distearate  
 30 Polyglyceryl-3 methylglucose distearate  
 Polyglyceryl-3 oleate, P. polyricinoleate  
 Polyglyceryl-3 stearate  
 Polyglyceryl-4 oleate, P. stearate  
 Polyglyceryl-6 dioleate, P. distearate  
 35 Polyglyceryl-6 laurate, P. myristate  
 Polyglyceryl-6 oleate, P. polyricinoleate  
 Polyglyceryl-6 stearate  
 Polyglyceryl-8 oleate  
 Polyglyceryl-10 decaoleate  
 40 Polyglyceryl-10 diisostearate  
 Polyglyceryl-10 dioleate, P. dipalmitate  
 Polyglyceryl-10 distearate, P. isostearate  
 Polyglyceryl-10 laurate, P. linoleate  
 Polyglyceryl-10 mixed fatty acids  
 45 Polyglyceryl-10 myristate  
 Polyglyceryl-10 oleate  
 Polyglyceryl-10 pentastearate  
 Polyglyceryl-10 stearate  
 Polyglyceryl-10 tetraoleate  
 50 Polyglyceryl-10 trioleate  
 Polyoxyethylene polyoxypropylene glycol  
 Polyquaternium-5, -31  
 Polysorbate 20, 21, 40, 60, 61  
 Polysorbate 65, 80, 81, 85  
 Potassium alginate, P. cetyl phosphate  
 Potassium laurate, P. myristate  
 Potassium tallowate  
 PPG-1-PEG-9 lauryl glycol ether  
 PPG-2-ceteareth-9  
 PPG-3 isosteareth-9  
 PPG-3 PEG-6 oleylether  
 PPG-5-buteth-7  
 PPG-5-ceteth-20  
 PPG-5-ceteth-10 phosphate  
 PPG-8 oleate  
 PPG-10 cetyl ether phosphate  
 PPG-12-PEG-50 lanolin  
 PPG-15 stearyl ether  
 PPG-24-buteth-27  
 PPG-25 laureth-25  
 PPG-26-buteth-26  
 PPG-26 oleate  
 PPG-36 oleate  
 Propylene glycol alginate, P.g. dioleate  
 Propylene glycol hydroxystearate  
 Propylene glycol laurate, P.g. ricinoleate  
 Propylene glycol ricinoleate SE  
 Propylene glycol stearate  
 Propylene glycol stearate, SE  
 Quaternium-33  
 Rapeseedamidopropyl ethyldimonium ethosulfate  
 Rice (*Oryza sativa*) bran wax  
 Ricinoleamide DEA  
 Ricinoleic acid  
 Saponins  
 Selenium protein complex  
 Silicone quaternium-5, -6  
 Sodium acrylates vinyl isodecanoate crosspolymer  
 Sodium caproyl lactylate  
 Sodium carbomer  
 Sodium cetyl sulfate  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium isostearyl lactylate  
 Sodium laureth-17 carboxylate  
 Sodium lauroyl lactylate  
 Sodium lauryl sulfate  
 Sodium nonoxynol-6 phosphate  
 Sodium octyl sulfate  
 Sodium oleate  
 Sodium oleyl sulfate  
 Sodium phosphate  
 Sodium stearyl lactylate  
 Sorbeth-20  
 Sorbitan isostearate, S. laurate  
 Sorbitan oleate, S. palmitate  
 Sorbitan sesquiisostearate

- Sorbitan sesquioleate, S. sesquistearate  
 Sorbitan stearate, S. triisostearate  
 Sorbitan trioleate, S. tristearate  
 Soyamidopropyl dimethylamine  
 5 Soyamine  
 Stearamide DEA  
 Stearamide DIBA-stearate  
 Stearamidoethyl diethylamine  
 Stearamidopropyl dimethylamine, lactate  
 10 Stearamidopropyl PG-dimonium chloride  
 phosphate  
 Stearamine  
 Stearamine oxide  
 Steareth-2, -4, -6, -7, -10, -11, -13  
 15 Steareth-2 phosphate  
 Steareth-15, -20, -21, -30, -100  
 Stearic acid  
 Sucrose cocoate, S. distearate  
 Sucrose stearate  
 20 Sythetic beeswax  
 Tallow glyceride, acetylated hydrogenated  
 Tallowamide DEA  
 Tallowamidopropyl dimethylamine  
 Talloweth-6  
 25 Tetrasodium dicarboxyethyl stearyl  
 sulfosuccinamide  
 TEA-acrylates/acrylonitrogens copolymer  
 Tissue extract  
 Triceteareth-4 phosphate  
 30 Trideceth-3, -5, -6, -7, -8  
 Trideceth-9, -10, -12, -15  
 Tridecyl ethoxylate  
 Triethanolamine  
 Trilaureth-4 phosphate  
 35 Triolein  
 Trisodium HEDTA  
 Tristearin

**Enzyme**

- 40 Fermented vegetable  
 Ganoderma lucidum oil  
 Lipase  
 Papain  
 Soy (Glycine soja) protein  
 45 Superoxide dismutase

**Essential oil**

- Aesculus chinensis extract  
 Artemisia apiacea extract  
 50 Brassica rapa-depressa extract  
 Caraway (Carum carvi) oil  
 Cardamon (Elettaria cardamomum) oil  
 Clove (Eugenia caryophyllus) oil

- Eclipta alba extract  
 Eucalyptus globulus oil  
 Euphatorium fortunei extract  
 Euterpe precatoria extract  
 Hierochloe odorata extract  
 Kadsura heteliloca extract  
 Ligustrum lucidum extract  
 Lysimachia foenum-graecum extract  
 Melaleuca bracteata extract  
 Melaleuca hypericifolia extract  
 Melaleuca symphyocarp extract  
 Melaleuca uncinata extract  
 Melaleuca wilsonii extract  
 Nasturtium sinensis extract  
 Nelumbium speciosum extract  
 Paulownia imperialis extract  
 Rosemary (Rosmarinus officinalis) oil  
 Selinum spp. extract  
 Trichomonas japonica extract  
 Withania somniferum extract  
 Yuzu oil  
 Ziziphus jujuba extract

**Exfoliant**

- Apricot (Prunus armeniaca) kernel powder  
 Glycolic acid  
 Jojoba (Buxus chinensis) seed powder  
 Lactic acid Papain  
 PEG 11-Avocado Glycerides  
 Willow (Salix alba) bark extract

**Fiber**

- Corn (Zea mays) cob powder  
 Nylon-66  
 Oat (Avena sativa) bran, meal  
 Rayon

**Film former**

- Acetylated lanolin  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylate/octylarylamide copolymer  
 Acrylate copolymer alkylated  
 polyvinylpyrrolidone  
 Ammonium acrylates/acrylonitrogens copolymer  
 Betaglucan  
 Bladderwrack (Fucus vesiculosus) extract  
 Carboxymethylchitosan  
 N,O-Carboxymethylchitosonium  
 Chitosan lactate  
 Collagen  
 Collagen phthalate  
 Colloidal oatmeal  
 Desamido collagen

- Diisostearoyl trimethylolpropane siloxy silicate  
DMHF  
Ethyl ester of hydrolyzed silk  
Ethylcellulose  
5 Gellan gum  
Glycerin/diethylene glycol/adipate crosspolymer  
High beta-glucan barley flour  
Hydrolyzed collagen  
Hydrolyzed keratin  
10 Hydrolyzed oat protein  
Hydrolyzed pea protein  
Hydrolyzed reticulin  
Hydrolyzed RNA  
Hydrolyzed silk  
15 Hydrolyzed soy protein  
Hydrolyzed wheat protein  
Hydrolyzed wheat protein/dimethicone copolyol  
phosphate copolymer  
Hydrolyzed wheat protein/PVP copolymer  
20 Hydroxypropylcellulose  
Hydroxypropyltrimonium gelatin  
Jojoba (*Buxus chinensis*) oil  
Lactoglobulin  
Myristoyl hydrolyzed collagen  
25 Nitrocellulose  
Oat (*Avena sativa*) extract, protein  
Polyethylene, ionomer  
Polyquaternium-6, -7, -11, -22, -39  
Polyvinyl acetate, P. alcohol  
30 PVM/MA decadiene crosspolymer  
PVP/Dimethiconylacrylate/polycarbamyl/polyglycol ester  
35 PVP/dimethylaminoethylmethacrylate copolymer  
PVP/dimethylaminoethylmethacrylate/  
polycarbamyl/polyglycol ester  
PVP/eicosene copolymer  
PVP/hexadecene copolymer  
40 PVP/hydrolyzed wheat protein copolymer  
Rice peptide  
Sericin  
Shea butter (*Butyrospermum parkii*)  
Shellac  
45 Sodium C12-15 pareth-7 sulfonate  
Sodium hyaluronate  
Souble collagen  
Souble keratin  
Souble wheat protein  
50 TEA-acrylates/acrylonitrogens copolymer  
Tosylamide/epoxy resin  
Tricontanyl PVP  
Triethonium hydrolyzed collagen ethosulfate
- Wheat peptide
- Fixative**  
Acrylates copolymer  
Adipic acid/dimethylaminohydroxypropyl  
diethylene triamine copolymer  
AMP-acrylates copolymer  
Hydrolyzed zein  
Methacryloyl ethyl betaine/acrylates copolymer  
Methyl rosinat  
Polyquaternium-4, -10, -29  
PPG-20 methyl glucose ether  
Sodium polystyrene sulfonate
- Flavor (aroma)**  
Benzaldehyde  
Caraway (*Carum carvi*) oil  
Cardamon (*Elettaria cardamomum*) oil  
Cinnamon (*Cinnamomum casia*) oil  
Clove (*Eugenia caryophyllus*) oil  
Ethyl vanillin  
Eucalyptus globulus oil  
Flavor (aroma)  
Glutamic acid  
Glycyrrhetic acid  
Glycyrrhizic acid  
Glycyrrhizin, ammoniated  
Methyl salicylate  
Orange (*Citrus aurantium dulcis*) oil  
Peppermint (*Mentha piperita*) oil  
Rosemary (*Rosmarinus officinalis*) oil  
Sodium glycyrrhizinate  
Thymol Vanillin
- Foam booster**  
Alkyldimethylamine oxide  
Babassuamidopropyl betaine  
Babassuamidopropylamine oxide  
Caprylyl pyrrolione  
Carrageenan (*Chondrus crispus*)  
Cocamide DEA, C. MIPA  
Cocamidopropyl betaine  
Cocamidopropyl dimethylamine lactate  
Cocamidopropyl hydroxysultaine  
Coco-betaine  
Coco/oleamidopropyl betaine  
Cocoyl amido hydroxy sulfo betaine  
Cocoyl monoethanolamide ethoxylate  
DEA-hydrolyzed lecithin  
Dimethyl lauramine  
Disodium cocamido MEA-sulfosuccinate  
Disodium cocoamphodiacetate  
Disodium lauramido MEA-sulfosuccinate



- Disodium laureth sulfosuccinate  
Lauramide MIPA  
Lauramidopropyl betaine  
Lauryl betaine
- 5 Myristamidopropyl dimethylamine dimethicone  
copolyol phosphate  
Myristamine oxide  
Ocryldodecyl benzoate  
Oleamide DEA, O. MIPA
- 10 Oleyl betain  
Palm kernelamide DEA  
PEG-3 lauramine oxide  
PPG-15 stearyl ether benzoate  
PEG-7000
- 15 Sodium cocoamphoacetate  
Sodium cocoyl isethionate  
Sodium laureth sulfate  
Sodium lauroyl wheat amino acids  
Sodium octoxynol-2 ethane sulfonate
- 20 Soyamidopropyl betaine  
Tallowamide MEA
- Foam stabilizer**  
Babassuamidopropylamine oxide
- 25 Behenamine oxide  
Caprylyl pyrrolidone  
Cetamine oxide  
Cocamide DEA, C. MEA, C. MIPA  
Cocamidopropyl betaine
- 30 Cocamidopropyl hydroxysultaine  
Cocamidopropyl lauryl ether  
Cocamidopropylamine oxide  
Cocamine oxide  
Dihydroxyethyl C12-15 alkoxypropylamine oxide
- 35 Dihydroxyethyl cocamine oxide  
Dihydroxyethyl tallowamine oxide  
Erucamidopropyl hydroxysultaine  
Hydroxypropyl methylcellulose  
Isostearamide DEA
- 40 Lauramide DEA, L. MEA  
Lauramido propylamine oxide  
Lauramine oxide  
Laureth-10  
Lauric-linoleic DEA
- 45 Lauroyl-linoleoyl diethanolamide  
Lauroyl-myristoyl diethanolamide  
Lauryl pyrrolidone  
Linoleamide MEA  
Myristamide DEA, M. MEA
- 50 Oleamide MEA  
Palmitamide MEA  
PEG-3 lauramide  
PEG-4 oleamide
- Ricinoleamide MEA  
Sesamide DEA  
Wheat germamide DEA
- Foamer**  
Ammonium laureth sulfate  
Ammonium laureth-5 sulfate  
Ammonium laureth-12 sulfate  
Ammonium lauryl sulfate, A.I. sulfosuccinate  
Ammonium myreth sulfate  
Ammonium nonoxynol 4 sulfate  
Capryl caprylylglucoside  
Cetyl betaine  
Cocamide  
Cocamidopropyl dimethylamine  
Cocamidopropyl dimethylamine lactate  
DEA-laureth sulfate  
DEA lauryl sulfate  
Decyl glucoside  
Disodium caproamphodiacetate  
Disodium caproamphodipropionate  
Disodium capryloamphodiacetate  
Disodium cocoamphodipropionate  
Disodium lauroamphodiacetate  
Disodium lauroamphodipropionate  
Disodium lauryl sulfosuccinate  
Disodium oleamido MEA-sulfosuccinate  
Disodium oleamido MIPA-sulfosuccinate  
Disodium PEG-4 cocoamido MIPA-sulfosuccinate  
Isostearamidopropylamine oxide  
Lauryl glucoside  
Methyl gluceth-20  
MEA-laureth sulfate  
Mixed isopropanolamines myristate  
MIPA-lauryl sulfate  
PEG-80 sorbitan laurate  
PEG lauryl ether sulfate  
Potassium cocoate, P. lauryl sulfate  
Quillaja saponaria extract  
Sodium caproamphoacetate  
Sodium capryloamphoacetate  
Sodium capryloamphohydroxypropylsulfonate  
Sodium cocoamphoacetate  
Sodium cocoamphopropionate  
Sodium C12-15 pareth-25 sulfate  
Sodium C12-15 pareth-3 sulfonate  
Sodium C12-15 pareth-15 sulfonate  
Sodium C14-16 olefin sulfonate  
Sodium deceth sulfate  
Sodium laureth-2 sulfate  
Sodium laureth-3 sulfate  
Sodium laureth-7 sulfate

- Sodium lauriminodipropionate  
 Sodium laurylether sulfosuccinate  
 Sodium lauryl sulfate, S.I. sulfoacetate  
 Sodium lauryl sulfosuccinate  
 5 Sodium magnesium laureth sulfate  
 Sodium myreth sulfate, S. myristyl sulfate  
 Sodium trideceth sulfate  
 Sodium tridecyl sulfate  
 10 TEA-dodecylbenzenesulfonate  
 TEA-laureth sulfate  
 TEA-lauroyl collagen amino acids  
 TEA-lauroyl keratin amino acids  
 TEA-lauryl sulfate  
 TEA-palm kernel sarcosinate  
 15 Wheat germamidopropyl betain  
 Yucca vera extract
- Fragrance**  
 Chamaecyparis obtusa oil  
 20 Orange (Citrus aurantium dulcis) oil  
 Peppermint (Mentha piperita) oil  
 Phenethyl alcohol
- Fragrance solvent**  
 25 Benzyl benzoate  
 Diethyl phthalate  
 Triacetin  
 Triethyl citrate
- 30 **Fungicide**  
 Astrocaryum murumuru extract  
 Azadirachta indica extract  
 Captan  
 Diiodomethyltolylsulfone  
 35 Ficus racemosa extract  
 Hexetidine  
 Ligusticum jeholense extract  
 Mauritia flexosa extract  
 Melaleuca symphyocarp extract  
 40 Melia australasica extract  
 Melia azadirachta extract  
 Mushroom (Cordyceps sabolifera) extract  
 Mushroom (Coriolus versicolor) extract  
 Sodium undecylenate  
 45 Tea tree (Melaleuca alternifolia) oil  
 Thiabendazole  
 Undecylenamide MEA  
 Zinc undecylenate  
 50 Ziziphus jujuba extract
- Gellant**  
 Acrylic acid/acrylonitrogens copolymer  
 Agar
- Algin  
 Aluminum distearate, A. tristearate  
 Ammonium acrylates/acrylonitrogens copolymer  
 Behenic acid  
 Calcium alginate  
 Carbomer  
 Carboxymethylchitosan  
 N,O-Carboxymethylchitosonium  
 Carrageenan (Chondrus crispus)  
 Ceresin  
 Cetearyl candelillate  
 Dibenzylidene sorbitol  
 Ethylene/acrylic acid copolymer  
 Ethylene/VA copolymer  
 Gellan gum  
 Hexanediol behenyl beeswax  
 Hydrogenated jojoba oil  
 Hydrogenated jojoba wax  
 Hydroxystearic acid  
 Jojoba wax  
 Laneth-5, -15  
 Montmorillonite  
 Myreth-3-octanoate  
 Octacosanyl stearate  
 Oleth-3 phosphate  
 Oleth-10 phosphate  
 Poloxamer 105, 123, 124, 185, 235  
 Poloxamer 237, 238, 338, 407  
 Polyethylene  
 Polyethylene, oxidized  
 Polyquaternium-31  
 Potassium alginate, P. chloride  
 Sodium nonoxynol-6 phosphate  
 Sodium tallowate  
 Synthetic beeswax  
 TEA-acrylates/acrylonitrogens copolymer  
 Tribehenin
- Glosser**  
 C18-36 acid glycol ester  
 Diphenyl dimethicone  
 Methyl gluceth-10  
 Octyldodecyl lactate  
 Phenyl methicone, P. trimethicone  
 Polyglyceryl-2 dioleate  
 Polyisobutene  
 Polyisobutene/isohexapentacontahectane  
 Polyisobutene/isooctahexacontane  
 Polymethacrylamidopropyltrimonium chloride  
 PPG-10 methyl glucose ether  
 PPG-36 oleate  
 Tea (Camellia sinensis) oil  
 Tribehenin

**Hair care**

- Gentiana scabra extract  
 Maidenhair fern extract  
 Nicotinamide  
 5 Nicotinic acid  
 Paeonia lactiflorum extract  
 Watercress (*Nasturtium officinale*) extract

**Hair conditioner**

- 10 Amino bispropyl dimethicone  
 Amodimethicone  
 AMPD-isostearoyl hydrolyzed collagen  
 Aqua Ichthammol  
 Babassu (*Orbignya oleifera*) oil  
 15 Babassuamidopropyl ammonium chloride  
 Behenamidopropyl dimethylamine  
 Behenamidopropyl hydroxyethyl dimonium chloride  
 Behentrimonium chloride  
 20 Biotin  
 Bishydroxyethyl biscetyl malonamide  
 Borageamidopropyl phosphatidyl PG-dimonium chloride  
 Brazil nut (*Bertholletia excelsa*) oil  
 25 Cetearyl trimonium methosulphate  
 Cetrimonium bromide, C. chloride  
 Cetyl pyridinium chloride  
 Chia (*Salvia hispanica*) oil  
 Chrysanthemum morifolium extract  
 30 Cinchona succirubra extract  
 Cocamidopropyl dimethylamine propionate  
 Coccinea indica extract  
 Cocodimonium hydroxypropyl hydrolyzed collagen  
 35 Cocodimonium hydroxypropyl hydrolyzed keratin  
 Cocodimonium hydroxypropyl silk amino acids  
 Cocodimonium hydroxypropyl hydrolyzed wheat protein  
 Cocodimonium hydroxypropyloxyethyl cellulose  
 40 Cocotrimonium chloride  
 Collagen amino acids  
 Cyclomethicone  
 L-cysteine HCL  
 Dibehenyldimonium methosulfate  
 45 Dicetyldimonium chloride  
 Dicocodimonium chloride  
 Dihydroxyethyl tallowamine oleate  
 Dimethicone  
 Dimethicone copolyol acetate, D.c. almondate  
 50 Dimethicone copolyol amine  
 Dimethicone copolyol bishydroxyethylamine  
 Dimethicon copolyol isostearate, D.c. laurate  
 Dimethicone copolyol olivate

Dimethicone hydroxypropyl trimonium chloride  
 Dimethyl lauramine dimer dilinoleate  
 Dioleylamidoethyl hydroxyethylmonium methosulfate  
 Dipalmitoylethyl hydroxyethylmonium methosulfate  
 Diphenyl dimethicone  
 Ditallowdimonium chloride  
 N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
 Entada phaseoloides extract  
 Ethyl ester of hydrolyzed animal protein  
 Gelatin  
 Ginseng hydroxypropyltrimonium chloride butylene glycol  
 Hematin  
 Honey (Mel)  
 Hydrolyzed collagen  
 Hydrolyzed hair keratin  
 Hydrolyzed vegetable protein  
 Hydrolyzed wheat protein/dimethicone copolyol acetyl copolymer  
 Hydrolyzed wheat protein hydroxypropyl polysiloxane  
 Hydroxyethyl cetyldimonium phosphate  
 Hydroxypropyl trimonium hydrolyzed collagen  
 Hydroxypropyl trimonium hydrolyzed wheat protein polysiloxane copolymer  
 Hyssop (*Hyssopus officinalis*) extract  
 Inga edulis extract  
 Isostearamidopropylamine oxide  
 Isostearoyl hydrolyzed collagen  
 Keratin amino acids  
 Kiwi (*Actinidia chinensis*) fruit extract  
 Kola (*Cola acuminata*) extract  
 Laminaria japonica extract  
 Laurtrimonium chloride  
 Lauryl hydroxypropyl trimonium polysiloxane copolymer  
 Lauryldimethylamine isostearate  
 Lauryldimonium hydroxypropyl hydrolyzed collagen  
 Lauryldimonium hydroxypropyl hydrolyzed wheat protein  
 Linoleamidopropyl dimethylamine dimer dilinoleate  
 Linoleamidopropyl dimethylamine  
 Lysimachia foenum-graecum extract  
 Melaleuca hypericifolia extract  
 Ocimum santum extract  
 Olealkonium chloride  
 Oleyl dimethylamidopropyl ethonium ethosulfate  
 Palmitamidodecanediol

- Panthenyl ethyl ether  
 Paulownia imperialis extract  
 Peach (*Prunus perisca*) leaf extract  
 PEG-2 cocomonium chloride  
 5 PEG-120 jojoba acid/alcohol  
 PG-hydroxycellulose lauryldimonium chloride  
 PG-hydroxyethylcellulose cocodimonium chloride  
 PG-hydroxyethylcellulose lauryldimonium chloride  
 10 PG-hydroxyethylcellulose stearyldimonium chloride  
 Phenyl trimethicone  
 Phospholipids  
 Phytantriol  
 15 Polyoxyethylene polyoxypropylene glycol  
 Polypropylene glycol  
 Polyquaternium-4, -6, -7, -10  
 Polyquaternium-22, -28, -39  
 PPG-5-ceteth-10-phosphate  
 20 Propyltrimonium hydrolyzed collagen  
 propyltrimonium hydrolyzed soy protein  
 Quaternium-18, -75, -81, -82  
 Quaternium-79 hydrolyzed keratin  
 Quaternium-79 hydrolyzed silk  
 25 *Sambucus nigra* extract, oil  
 Sesamidopropalkonium chloride  
 Silicone quaternium-1, -8  
 Sodium cocoamphoacetate  
 Sodium cocoyl hydrolyzed collagen  
 30 Sodium polystyrene sulfonate  
 N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
 Steapyrium chloride  
 Stearalkonium chloride  
 35 Stearamidopropyl dimethylamine  
 Steardimonium hydroxypropyl hydrolyzed wheat protein  
 STeartrimonium chloride  
 Steartrimonium hydroxyethyl hydrolyzed collagen  
 40 N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
 Stenocalyx micalii extract  
 Sulfur  
 45 Tallowbenzyl dimethylammonium chloride, hydrogenated  
 Tallowtrimonium chloride  
 Tea (*Camellia sinensis*) oil  
 TEA-cocoyl hydrolyzed soy protein  
 Thenoyl methionate  
 50 Trimethylsilylamodimethicone  
 Wheat amino acids

Hair set resin polymer

- Acrylates/acrylamide copolymer  
 Acrylates/PVP copolymer  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylarylamide copolymer  
 AMP-acrylates copolymer  
 Butylester of PVM-MA copolymer  
 Carboxylated vinylacetate terpolymer  
 Diglycol/CHDM/isophthalates/SIP copolymer  
 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Hydroxypropyl chitosan  
 Isopropyl ester of PVM/MA copolymer  
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer  
 Polymethacrylamidopropyltrimonium chloride  
 Polypropylene glycol oligosuccinate  
 PVP  
 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/Polycarbamyl polyglycol ester  
 PVP/VA copolymer  
 PVP/VA vinyl propionate copolymer  
 Sodium polyacrylate  
 VA/butyl maleate/isobornyl acrylate copolymer  
 VA/crotonates/vinyl neodecanoate copolymer  
 VA/crotonates/vinyl propionate copolymer  
 VA/crotonates copolymer  
 Vinyl caprolactam/PVP/  
 dimethylaminoethylmethacrylate copolymer

Hair sheen

- Maidenhair fern extract  
 Tetrabutoxypropyl methicone

Hair waving

- Ammonium thioglycolate, A. thiolactate  
 Argania spinosa oil  
 L-cysteine HCL  
 Cystine  
 Diammonium dithiodiglycolate  
 Dilauryl thiodipropionate  
 Ethanolamine sulfite, E. thioglycolate  
 Ethanolamine thiolactate  
 Glyceryl thioglycolate  
 Hydroxymethyl dioxazabicyclooctane  
 Jojoba esters  
 Monoethanolamine thiolactate  
 Shea butter, ethoxylated  
 Sodium thioglycolate  
 Thioglycerin  
 Thioglycolic acid  
 Thiolactic acid

**Humectant**

- Acetamide MEA
- Acetyl monoethanolamine
- 5 6-(N-Acetylamino)-4-oxyhexyltrimonium chloride
- Adenosine phosphate
- Ammonium lactate
- Atelocollagen
- Calcium pantothenate
- 10 Calcium stearoyl lactylate
- Carboxymethyl chitin
- Carboxymethyl chitosan succinamide
- Chitosan PCA
- Cholesteryl hydroxystearate
- 15 Collagen amino-polysiloxane hydrolyzate
- Colloidal oatmeal
- Copper PCA methylsilanol
- Dimethicone copolyol laurate
- Dipotassium glycyrrhizinate
- 20 Ethyl ester of hydrolyzed silk
- Fatty quaternary amine chloride complex
- Glucos glutamate
- Glycereth-4,5-lactate
- Glycereth-7, -12, -26
- 25 Glycerin
- Honey extract
- Hydrogenated passion fruit oil
- Hydrolyzed casein
- Hydrolyzed fibronectin
- 30 Hydrolyzed glycosaminoglycans
- Hydrolyzed oat protein
- Hydrolyzed silk
- Hydrolyzed soy protein
- Hydroxypropyl chitosan
- 35 Hydroxypropyltrimonium hydrolyzed casein
- Hydroxypropyltrimonium hydrolyzed silk
- Hydroxypropyltrimonium hydrolyzed soy protein
- Hydroxypropyltrimonium hydrolyzed wheat protein
- 40 Keratin amino acids
- Lactamide DGA, MEA
- Lactamidopropyl trimonium chloride
- Lactic acid
- Lactose
- 45 Lauroyl lysine
- Maltitol
- Mannitol
- Methyl gluceth-10, -20
- Natto gum
- 50 Oat (Avena sativa) extract, protein
- Panthenol
- Panthenyl ethyl ether
- PCA

**PEG-4**

- Polyamino sugar condensate
- Potassium lactate
- Propylene glycol
- Propyltrimonium hydrolyzed collagen
- propyltrimonium hydrolyzed soy protein
- Propyltrimonium hydrolyzed wheat protein
- Quaternium-22
- Rice (Oryza sativa) germ oil
- Sea Salts (Maris sal)
- Shea butter (Butyrospermum parkii)
- Silk powder
- Sodium behenoyl lactylate
- Sodium caproyl lactylate
- Sodium cocoyl lactylate
- Sodium hyaluronate
- Sodium isostearoyl lactylate
- Sodium lactate, S. lauroyl lactylate, S. PCA
- Sodium polyglutamate
- Sodium stearoyl lactylate
- Sorbitan laurate
- Sorbitan sesquiisostearate
- Sorbitol
- Sphingolipids
- TEA-PCA
- Urea

**Hydrotrope**

- Ammonium cumenesulfonate
- Ammonium xylenesulfonate
- Cetamine oxide
- Cocamidopropylamine oxide
- Lauramine oxide
- Potassium toluenesulfonate
- PPG-2-isodeceth-4, -6, -9, -12
- Sodium cumene sulfonate
- Sodium laureth-13-carboxylate
- Sodium toluene sulfonate
- Sodium xylene sulfonate
- Trideceth-19-carboxylic acid

**Intermediate**

- Caprylic acid
- Deceth-3
- Diethyl succinate
- Dimethylaminopropylamine
- DM hydantoin
- Dodecylbenzene sulfonic acid
- Ethylene dichloride
- 4-Fluoro 3-nitro aniline
- Lauramine
- Methyl benzoate, M. cocoate
- Methyl isostearate, M. laurate

	Methyl myristate, M. palmitate	Mango (Mangifera indica) oil
	Oleic acid	Mineral oil (Paraffinum liquidum)
	Ricinoleic acid	Mink oil
	Tall oil acid	Monostearyl citrate
5	Tallow acid	Neatsfoot oil
	<b>Lathering agent</b>	Oleostearine
	Ammonium cocoyl sarcosinate	Partially hydrogenated soybean oil
	Ammonium C12-15 alkyl sulfate	PEG-2 stearate
10	Ammonium lauroyl sarcosinate	PEG-4 dilaurate
	Cocamide MEA ethoxylate	PEG-5M
	Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen	PEG-9M
	Lauroyl sarcosine	PEG-23M
15	Myristoyl sarcosine	PEG-27 lanolin
	Sodium cocoyl sarcosinate	PEG-30 lanolin
	Sodium lauroyl sarcosinate	PEG-40 lanolin, P. stearate
	Sodium methyl cocoyl taurate	PEG-45M
	Sodium myristoyl sarcosinate	PEG-90M
20	TEA-cocoyl sarcosinate	PEG-160M
	TEA-lauroyl sarcosinate	PEG/PPG-17/6 copolymer
	<b>Lubricant</b>	Pentaerythrityl tetrapelargonate
	Aluminum salt octenyl succinate	Petrolatum
25	Amodimethicone	Phenethyl dimethicone
	Boron nitride	Phenyl methicone
	Calcium aluminum borosilicate	Polyacrylamidomethylpropane sulfonic acid
	Calcium stearate	Polybutane
	Caprylic/capric triglyceride	Polydimethicone copolyol
	Coceth-7 carboxylic acid	Polyglycerol ester of mixed vegetable fatty acids
30	Coconut (Cocos nucifera) oil	Polymethylsilsesquioxane
	Cyclomethicone	Potassium laurate, P. myristate
	Diisodecyl adipate	Potassium tallowate
	Diisostearyl fumarate	PPG-2 myristyl ether propionate
	Dimethicone copolyol	PPG-3 myristyl ether
35	Glyceryl isostearate, G. oleate	PPG-9-buteth-12
	Glyceryl polymethacrylate	PPG-11 stearyl ether
	Gold of Pleasure oil	PPG-12-buteth-16
	Hyaluronic acid	PPG-12-PEG-50 lanolin
	Hydrogenated coconut oil	PPG-14 butyl ether
40	Hydrogenated cottonseed oil	PPG-20 cetyl ether
	Hydrogenated palm oil	PPG-20-buteth-30
	Hydrogenated soybean/cottonseed oil	PPG-24-buteth-27
	Hydrogenated soybean oil	PPG-28-buteth-35
	Hydrogenated vegetable oil	PPG-36 oleate
45	Hydrolyzed oat flour	PPG-40 butyl ether
	Hydroxypropyl guar	Quaternium-79 hydrolyzed keratin
	Isodecyl stearate	Quaternium-79 hydrolyzed silk
	Isopropyl lanolate	Rice (Oryza sativa) starch
	Isostearyl diglyceryl succinate	Shea butter (Butyrospermum parkii) extract
50	Jojoba esters	Shorea stenoptera butter
	Lanolin oil	Silica
	Laureth-3 phosphate	Stearamide MEA, S. MEA-stearate
	Magnesium myristate, M. stearate	Stearoxytrimethylsilane
		Stearyl dimethicone
		Triisostearyl citrate

Triolein  
Trisodium HEDTA  
Triundecanoic  
Zinc laurate, Z. stearate

5

**Miscellaneous**

*Adhesion promoter* — Glycerin/diethylene glycol/  
adipate crosspolymer

*Analgesic* — Glycol salicylate

10

*Anesthetic* — Benzocaine

*Anti-elastic* — Hydrolyzed Ulva lactuca extract

*Anti-itching* — Sodium shale oil sulfonate

*Antiacid* — Magnesium hydroxide, Magnesium  
silicate, Simethicone

15

*Antifoam* — Dimethicone silylate, Simethicone

*Antilipasic* — Laminaria saccharina extract

*Antipruritic* — Coal tar

*Antispasmodic* — Garlic (*Allium sativum*) extract

20

*Antiwrinkle* — Chinese hibiscus (*Hibiscus rosa-  
sinensis*) extract

*Barrier* — Glycerin/diethylene glycol/adipate  
crosspolymer

*Cell regeneration* — Glycoproteins, Hydrolyzed  
Ulva lactuca extract

25

*Co-emulsifier* —

Cholesteryl/behanyl/octyldodecyl lauroyl  
glutamate, Isododecane

*Colloid* — Gelatin

*Cooling agent* — Menthyl PCA, Menthone  
glycerin acetal

30

*Detoxifier* — Clover (*Trifolium pratense*) extract

*Dye stabilizer* — Uric acid

*Filler* — Mica

*Fragrance stabilizer* — 2,2',4,4'-

35

Tetrahydroxybenzophenone

*Free radical scavenger* — Melanin

*IR filter* — Corallina officinalis

*Lanolin substitute* — PEG-80 jojoba acid/alcohol

*Lipolytic* — Gelidium cartilagineum

40

*Oxidant* — Barium peroxide, Hydrogen peroxide,  
Urea peroxide

*Oxygen carrier* — Perfluorodecalin

*Peroxide stabilizer* — Phenacetin, Sodium  
stannate

45

*Scalp stimulant* — Birch (*Betula alba*) leaf extract

*Sebostatic* — Laminaria saccharina extract

*Shine enhancer* — Hydrolyzed wheat protein  
hydroxypropyl polysiloxane

50

*Skin barrier lipid* — Ceramide 3, N(27-  
Stearoyloxy-heptacosanoyl) phytosphingosine

*Skin clarifier* — Oat (*Avena sativa*) bran extract

*Skin purifier* — Birch (*Betula alba*) leaf extract

*Substantivity* — Dimethicone copolyol  
bis(hydroxyethyl)amine, Dimethicone  
hydroxypropyl trimonium chloride,  
Trimethylsilylamodimethicone

*Sunless tanning* — Acetyl tyrosine, Eclipta alba  
extract in white emulsion

*Tonic* — Kiwi (*Actinidia chinensis*) fruit extract,  
Matricaria (*Chamomilla recutita*) extract,

Orange (*Citrus aurantium dulcis*) peel extract

*Viscosity stabilizer* — Diisodecyl adipate

*Spreading agent* — Stearyl heptanoate

*Wound healing* — Comfrey (*Symphytum  
officinale*) leaf extract

*Waterproofing agent* — PVP/eicosene copolymer,  
PVP/hexadecene copolymer, Tricontanyl  
PVP

**Moisture barrier**

Acrylates/octylarylamide copolymer

Betaglucan

C16-18 alkyl methicone

Cholesterol

Glycolipids

Isoeicosane

Isobexadecane

Lanosterol

Octyl pelargonate, O. stearate

Polyisobutene

Polyisobutene/isohexapentacontahexane

Polyisobutene/isooctahexacontane

Silica silylate

Trihydroxypalmitamidohydroxy propyl myristyl  
ether

Trimethylsiloxysilicate

**Moisturizer**

Acetamidopropyl trimonium chloride

Adenosine triphosphate

Aesculus chinensis extract

Algae (*Ascophyllum nodosum*) extract

Algae extract

Aloe barbadensis, A.b. extract

Ammonium lactate

Amniotic fluid

Apple (*Pyrus malus*) extract

Apricot (*Prunus armeniaca*) kernel oil

Arginine PCA

Atelocollagen

Artemisia apiacea extract

Astrocryum murumuru extract

Avocado (*Persea gratissima*) extract, oil

Avocado (*Persea gratissima*) unsaponifiables

Babassu (*Orbignya oleifera*) oil

- |    |  |  |
|----|--|--|
|    | Bactri gasipaes extract                                    | Evening primrose ( <i>Oenothera biennis</i> ) extract, oil |
|    | Benincasa hispids extract                                  | Galla sinensis extract                                     |
|    | Betaglucan   | Ganoderma lucidum oil                                      |
|    | Betaine  | Ginseng ( <i>Panax ginseng</i> ) extract                   |
| 5  | Borage ( <i>Borago officinalis</i> ) seed oil              | Gleditsia sinensis extract                                 |
|    | Brazil nut ( <i>Bertholletia excelsa</i> ) extract, oil    | Glycereth-12   |
|    | C10-30 cholesterol/lanosterol esters                       | Glyceryl alginate, G. collaginate                          |
|    | Calcium pantothenate                                       | Glyceryl polymethacrylate                                  |
|    | Calcium protein complex                                    | Glycolic acid  |
| 10 | Caprylic/capric triglyceride                               | Glycolipids  |
|    | Caprylic/capric/lauric triglyceride                        | Glycosaminoglycans   |
|    | Caprylic/capric/linoleic triglyceride                      | Glycosphingolipids   |
|    | Caprylic/capric/oleic triglycerides                        | Gnetum amazonicum extract                                  |
| 15 | Cashew ( <i>Anacardium occidentale</i> ) nut oil           | Grape ( <i>Vitis vinifera</i> ) seed oil                   |
|    | Celastrus paniculata extract                               | Hazel ( <i>Corylus avellana</i> ) nut oil                  |
|    | Ceramide 33 (liquid soy extract)                           | Honey extract  |
|    | Chia ( <i>Salvia hispanica</i> ) oil                       | Hyaluronic acid  |
|    | Chinese hibiscus ( <i>Hibiscus rosa-sinensis</i> ) extract | Hybrid safflower ( <i>Carthamus tinctorius</i> ) oil       |
|    | Chitin   | Hydrogenated castor oil                                    |
| 20 | Chitosan, C. PCA   | Hydrogenated coconut oil                                   |
|    | Cholesteric esters   | Hydrogenated cottonseed oil                                |
|    | Cholesterol  | Hydrogenated lecithin                                      |
|    | Cholesteryl/behanyl/octyldodecyl lauroyl glutamate         | Hydrogenated palm oil                                      |
| 25 | Cocodimonium hydroxypropyl hydrolyzed collagen             | Hydrogenated polyisobutene                                 |
|    | Cocodimonium hydroxypropyl hydrolyzed silk                 | Hydrogenated soybean oil                                   |
|    | Cocodimonium hydroxypropyl hydrolyzed wheat protein        | Hydrogenated soybean/cottonseed oil                        |
| 30 | Cocodimonium hydroxypropyl silk amino acids                | Hydrogenated vegetable oil                                 |
|    | Collagen   | Hydrolyzed carbolipoprotein                                |
|    | Collagen amino acids, C. phthalate                         | Hydrolyzed collagen  |
|    | Copper aspartate, C. protein complex                       | Hydrolyzed elastin   |
|    | Corn ( <i>Zea mays</i> ) oil                               | Hydrolyzed fibronectin                                     |
| 35 | Cottonseed ( <i>Gossypium</i> ) oil                        | Hydrolyzed glycosaminoglycans                              |
|    | Crataegus cuneata extract                                  | hydrolyzed keratin   |
|    | Cucumber ( <i>Cucumis sativus</i> ) extract                | Hydrolyzed milk protein                                    |
|    | Desamido collagen  | Hydrolyzed oats  |
|    | Dicaprylyl maleate   | Hydrolyzed pea protein                                     |
| 40 | Diisocetyl dodecanedioate                                  | Hydrolyzed placental protein                               |
|    | Diisostearyl adipate                                       | Hydrolyzed rice protein                                    |
|    | Dimethyl hyaluronate                                       | Hydrolyzed transgenic collagen                             |
|    | Dimethylsilanol hyaluronate                                | Hydrolyzed serum protein                                   |
|    | Diocetyldodecyl dimer dilinoleate                          | Hydrolyzed silk  |
| 45 | Diocetyldodecyl dodecanedioate                             | Hydrolyzed sweet almond protein                            |
|    | Dipentaerythritol fatty acid ester                         | Hydrolyzed wheat protein                                   |
|    | Dog rose ( <i>Rosa canina</i> ) hips extract               | Hydroxyethyl chitosan                                      |
|    | Dog rose ( <i>Rosa canina</i> ) seed extract               | Inositol   |
|    | Echitea glauca extract                                     | Isodecyl salicylate  |
| 50 | Elastin amino acids  | Isostearyl hydrolyzed animal protein                       |
|    | Emblica officinalis extract                                | Jojoba ( <i>Buxus chinensis</i> ) oil                      |
|    | Ethyl minkate  | Jojoba esters  |
|    | Eugenia jambolana extract                                  | Keratin amino acids  |
|    |  | Kiwi ( <i>Actinidia chinensis</i> ) fruit extract          |
|    |  | Kola ( <i>Cola acuminata</i> ) extract                     |
|    |  | Kukui ( <i>Aleurites molaccana</i> ) nut oil               |



- |    |  |   |
|----|--|---|
|    | Lactamide DGA, L. MEA                              | Pfaffia spp. extract                                |
|    | Lactic acid  | Pistachio ( <i>Pistacia vera</i> ) nut oil          |
|    | Lactobacillus/whey ferment                         | Placental protein                                   |
|    | Lactococcus hydrolysate                            | Plankton extract                                    |
| 5  | Lactoyl methylsilanol elastinate                   | Polyamino sugar condensate                          |
|    | Lanolin alcohol                                    | Polybutene  |
|    | Lauryl PCA   | Polyunsaturated fatty acids                         |
|    | Lecithin   | Potassium DNA, P. lactate, P. PCA                   |
|    | Lesquerella fendleri oil                           | PPG-8/SMDI copolymer                                |
| 10 | Liposomes  | PPG-20 methyl glucose ether distearate              |
|    | Lysine PCA   | Propylene glycol dicaprylate/dicaprate              |
|    | Macadamia ternifolia nut oil                       | Propylene glycol dioctanoate                        |
|    | Magnesium aspartate                                | Pumpkin ( <i>Cucurbita pepo</i> ) seed oil          |
|    | Maltitol   | Quinoa ( <i>Chenopodium quinoa</i> ) extract        |
| 15 | Manganese aspartate                                | Rapeseed ( <i>Brassica campestris</i> ) oil         |
|    | Mango ( <i>Mangifera indica</i> ) oil              | Rehmannia chinensis extract                         |
|    | Mannan   | Rice ( <i>Oryza sativa</i> ) bran oil               |
|    | Marine polyaminosaccharide                         | Rose Water  |
|    | Mauritella armata extract                          | Royal jelly extract                                 |
| 20 | Maximilliana regia extract                         | Saccharide isomerate                                |
|    | Meadowfoam ( <i>Limnanthes alba</i> ) seed oil     | Saccharomyces lysate extract                        |
|    | Melaleuca hypericifolia extract                    | Saccharomyces/soy protein ferment                   |
|    | Methylsilanol elastinate, M. mannuronate           | Safflower ( <i>Carthamus tinctorius</i> ) oil       |
|    | Milk amino acids                                   | Selenium aspartate, S. protein complex              |
| 25 | Mineral oil ( <i>Paraffinum liquidum</i> )         | Sericin   |
|    | Molybdenum aspartate                               | Serum albumin                                       |
|    | Mouriri apiranga extract                           | Sesame ( <i>Sesamum indicum</i> ) oil               |
|    | Natto gum  | Shea butter ( <i>Butyrospermum parkii</i> )         |
|    | Nelumbium speciosum extract                        | Shea butter ( <i>Butyrospermum parkii</i> ) extract |
| 30 | Neopentyl glycol dicaprate                         | Shorea stenoptera butter                            |
|    | Oat ( <i>Avena sativa</i> ) protein                | Silk amino acids                                    |
|    | Octyl hydroxystearate                              | Sodium carboxymethyl beta-glucan                    |
|    | Ophiopogon japonicus extract                       | Sodium chondroitin sulfate                          |
|    | Orange ( <i>Citrus aurantium dulcis</i> ) peel wax | Sodium DNA, S. hyaluronate                          |
| 35 | Palmetto extract                                   | Sodium lactate, S. PCA                              |
|    | Pantethine   | Souble collagen                                     |
|    | Panthenyl ethyl ether                              | Souble transgenic elastin                           |
|    | Paraffin   | Soybean ( <i>Glycine soja</i> ) oil                 |
|    | Partially hydrogenated soybean oil                 | Spherical cellulose acetate                         |
| 40 | peanut ( <i>Arachis hypogaea</i> ) oil             | Spondias amara extract                              |
|    | Pecan ( <i>Carya illinoensis</i> ) oil             | Squalene  |
|    | PEG-4, -6, -8, -12                                 | Stomach extract                                     |
|    | PEG-70 mango glycerides                            | Sunflower ( <i>Helianthus annuus</i> ) seed oil     |
|    | PEG-75 shea butter glycerides                      | Superoxide dismutase                                |
| 45 | PEG-75 shorea butter glycerides                    | Tissue extract                                      |
|    | PEG-100 stearate                                   | Tocopheryl acetate, T. linoleate                    |
|    | Pentaerythrityl                                    | Tomato ( <i>Solanum lycopersicum</i> ) extract      |
|    | isostearate/caprate/caprylate/adipate              | Tormentil ( <i>Potentilla erecta</i> ) extract      |
|    | Pentaerythrityl stearate/caprate/caprylate/adipate | Trehalose   |
| 50 | Pentylene glycol                                   | Triundecanoin                                       |
|    | Perfluoropolyethylisopropyl ether                  | Vegetable oil                                       |
|    | Petrolatum   | Walnut ( <i>Juglans regia</i> ) oil                 |
|    | Petroleum wax                                      | Watercress ( <i>Nasturtium officinale</i> ) extract |

- 5 Wheat (*Triticum vulgare*) germ extract, germ oil  
Yarrow (*Achillea millefolium*) extract  
Wheat amino acids  
Yeast (*Saccharomyces cerevisiae*) extract (Faex)  
Yogurt filtrate  
Zinc aspartate  
Ziziphus jujuba extract
- 10 **Naturilizer**  
2-Aminobutanol  
Aminoethyl propanediol  
Aminomethyl propanediol  
Aminomethyl propanol  
Ammonium carbonate
- 15 Calcium hydroxide  
Diethanolamine  
Ethanolamine  
Glucamine  
Isopropanolamine
- 20 Isopropylamine  
2-Methyl-4-hydroxypyrrolidine  
Morpholine  
Sodium bromate  
Succinic acid
- 25 Tetrahydroxypropyl ethylenediamine  
Triethanolamine  
Tromethamine
- 30 **Oil absorbent**  
Hydrated silica  
Polymethyl methacrylate  
Silicon dioxide hydrate  
Walnut (*Juglans regia*) shell powder
- 35 **Ointment base**  
Borage (*Borago officinalis*) seed oil  
Caprylic/capric/stearic triglyceride  
Glyceryl cocoate  
Hydrogenated coco-glycerides
- 40 Lanolin  
Mink oil  
Oleostearine  
Tallow
- 45 **Opacifier**  
Barium sulfate  
C12-16 alcohols  
Cetearyl octanoate  
Cetyl myristate, C. palmitate
- 50 Cocamidopropyl lauryl ether  
Glyceryl distearate  
Glyceryl hydroxystearate  
Glyceryl myristate, G. stearate
- Glycol distearate, G. stearate  
Magnesium myristate  
PEG-2 distearate, P. stearate  
PEG-2 stearate SE  
PEG-3 distearate  
Propylene glycol myristate, P.g. stearate  
Stearamide  
Stearamide DIBA-stearate  
Stearamide MEA  
Stearamide MEA-stearate  
Stearamidopropyl dimethylamine lactate  
Stearyl stearate  
Styrene homopolymer  
Styrene/acrylates copolymer  
Styrene/PVP copolymer  
Triisostearin PEG-6 esters
- Plasticizer**  
Acetyl tributyl citrate  
Acetyl triethyl citrate  
AMP-isostearoyl hydrolyzed wheat protein  
AMPD-isostearoyl hydrolyzed collagen  
Cyclohexane dimethanol dibenzoate  
Dibutyl phthalate  
Diethyl phthalate  
Diethylene glycol dibenzoate  
Diisopropyl sebacate  
Dimethicone copolyol  
Dimethyl phthalate  
Dipropylene glycol dibenzoate  
Ethyl ester of hydrolyzed keratin  
Glycerol tribenzoate  
Glycol  
Hydrolyzed serum protein  
Isocetyl salicylate  
Isodecyl benzoate  
Isoeicosane  
Isopropyl lanolate  
Isostearoyl hydrolyzed collagen  
Lauroyl hydrolyzed collagen  
Marine collagen  
Monostearyl citrate  
Neopentyl glycol dibenzoate  
Octyl benzoate, O. laurate  
PEG-60 shea butter glycerides  
Pentaerythrityl tetrabenzoate  
Polyoxyethylene glycol dibenzoate  
Polypropylene glycol dibenzoate  
PPG-12-PEG-50 lanolin  
PPG-20 cetyl ether  
PPG-20 lanolin alcohol ether  
Propylene glycol dibenzoate  
Propylene glycol myristyl ether acetate

- Polymethacrylamidopropyltrimonium chloride  
Polyquaternium-6, -7, -10, -11, -22, -39  
Polysilicone-8  
Potassium alginate  
5 Potassium lauroyl collagen amino acids  
Potassium lauroyl hydrolyzed soy protein  
Potassium lauroyl wheat amino acids  
PPG-8/SMDI copolymer  
PPG-12/SMDI copolymer  
10 PPG-51/SMDI copolymer  
PVM/MA decadiene crosspolymer  
PVP/dimethylaminoethylmethacrylate copolymer  
PVP/VA copolymer  
Sodium cocoyl hydrolyzed wheat protein  
15 Steardimonium hydroxypropyl hydrolyzed wheat protein  
Steareth-2 phosphate  
TEA-acrylates/acrylonitrogens copolymer  
Tosylamide/epoxy resin  
20 Tosylamide/formaldehyde resin  
Trideceth-5, -6, -7, -8  
VA/butyl maleate/isobornyl acrylate copolymer  
VA/crotonates/vinyl neodecanoate copolymer  
Vinyl caprolactam/PVP/  
25 dimethylaminoethylmethacrylate copolymer  
Wheat (*Triticum vulgare*) protein  
Xanthan gum
- Powder**  
30 Acrylates copolymer, spherical powder  
Attapulgit  
Boron nitride  
Calcium aluminum borosilicate  
Calcium carbonate  
35 Cellulose triacetate  
Corn (*Zea mays*) cob powder, starch  
Hydrogenated jojoba wax  
Magnesium carbonate, M. myristate  
Magnesium stearate  
40 Mica  
Microcrystalline cellulose  
Nylon-6  
Nylon powder  
Oat (*Avena sativa*) starch  
45 Polyamide 12  
Polyethylene  
Polymethyl methacrylate  
Polymethylsilsesquioxane  
PTFE  
50 Silica  
Silk powder  
Spherical cellulose acetate  
Talc
- Tapioca dextrin  
Zinc laurate
- Powder absorbent**  
Aluminum starch octenylsuccinate  
Clays (white, yellow, red, green, pink)  
Sorbitol  
Tapioca
- Preservative**  
Alcohol  
Ascorbic acid  
Ascorbyl palmitate  
Benzalkonium chloride  
Benzethonium chloride  
Benzoic acid  
Benzyl alcohol  
Benzylparaben  
5-Bromo-5 nitro-1,3-dioxane  
2-Bromo-2-nitropropane-1,2-diol  
Butylparaben  
Calcium propionate  
Cetrimonium bromide  
Cetyl pyridinium chloride  
Chloroxyleneol  
Chlorphenesin  
o-Cymen-5-ol  
Diazolindinyl urea  
Dichlorobenzyl alcohol  
Dichlorophene  
Diiodomethyltolylsulfone  
Dimethyl hydroxymethyl pyrazole  
Dimethyl oxazolidine  
Disodium EDTA  
DMDM hydantoin  
EDTA  
Erythorbic acid  
7-Ethylbicyclooxazolidine  
Ethylparaben  
Fomistopsis officinalis oil  
Formaldehyde  
Glutaral  
Glyeryl laurate  
HEDTA  
Hexamidine diisethionate  
Hexetidine  
Imidazolidinyl urea  
Isobutylparaben  
Isopropyl sorbate  
Isopropylparaben  
MDM hydantoin  
Methenammonium chloride  
Methyl paraben sodium

- Rice (*Oryza sativa*) bran wax  
 Serum protein  
 Tosylamide/epoxy resin  
 Triacetin  
 5 Tributyl citrate  
 Triethyl citrate  
 Trimethyl pentanediol dibenzoate  
 Trimethylethanetribenzoate  
 10 **Polish**  
 Acrylates copolymer  
 Aluminum silicate  
 Neatsfoot oil  
 Tallow  
 15 **Polymer**  
 Acrylamide sodium acrylate copolymer  
 Acrylates-VA crosspolymer  
 Acrylates/acrylamide copolymer  
 20 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylacrylamide copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Adipic acid-epoxypropyl diethylenetriamine  
 copolymer  
 25 Adipic acid/dimethylaminohydroxypropyl  
 diethylene triamine copolymer  
 Ammonium acrylates copolymer  
 Ammonium acrylates/acrylonitrogens copolymer  
 AMP-acrylates copolymer  
 30 AMP-isostearoyl hydrolyzed collagen  
 Butylester of PVM-MA copolymer  
 Calcium carrageenan  
 Carboxylated vinylacetate terpolymer  
 Ceteareth-2 phosphate  
 35 Ceteareth-5 phosphate  
 Ceteareth-10 phosphate  
 Ceteareth-29, -34  
 Coco-glucoside  
 Cocodimonium hydroxypropyloxyethyl cellulose  
 40 C12-13 pareth-4, -9, -23  
 DEA-ceteareth-2-phosphate  
 DEA-oleth-5-phosphate  
 DEA-oleth-20-phosphate  
 Diglycol/CHDM/isophthalates/SIP copolymer  
 45 Diisopropyl dimer dilinoleate  
 Diisostearoyl trimethylolpropane siloxy silicate  
 Diisostearyl dimer dilinoleate  
 Dilinoleic acid  
 Dodecanedioic acid/cetearyl alcohol/glycol  
 50 copolymer  
 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Ethylene/acrylic acid copolymer  
 Ethylene/VA copolymer  
 Glycereth-26 phosphate  
 Hyaluronic acid  
 Hydrolyzed RNA  
 Hydrolyzed wheat protein polysiloxane polymer  
 Hydroxypropyltrimonium hydrolyzed collagen  
 Hydroxypropyltrimonium hydrolyzed wheat  
 protein  
 Laneth-40  
 Lauryldimonium hydroxypropyl hydrolyzed soy  
 protein  
 Methacrylol ethyl betaine/acrylates copolymer  
 Octylacrylamide/acrylates/butylaminoethyl  
 methacrylate copolymer  
 Oleth-2 phosphate  
 Oleth-5 phosphate  
 PEG-3 lanolate  
 PEG-4 stearate  
 PEG-5M  
 PEG-7 glyceryl cocoate  
 PEG-8 glyceryl laurate  
 PEG-8/SMDI copolymer  
 PEG-9 castor oil  
 PEG-9M  
 PEG-11 babassu glycerides  
 PEG-12 palm kernel glycerides  
 PEG-12 stearate  
 PEG-14 avocado glycerides  
 PEG-15 glyceryl laurate  
 PEG-20 corn glycerides  
 PEG-20 evening primrose glycerides  
 PEG-20 glyceryl oleate  
 PEG-23 oleate  
 PEG-23M  
 PEG-29 castor oil  
 PEG-42 babassu glycerides  
 PEG-45 safflower glycerides  
 PEG-45M  
 PEG-60 evening primrose glycerides  
 PEG-60 hydrogenated castor oil  
 PEG-75 castor oil  
 PEG-90M  
 PEG-120 distearate  
 PEG-150 lanolin  
 PEG-160M  
 PG-hydroxycellulose lauryldimonium chloride  
 PG-hydroxyethylcellulose cocodimonium chloride  
 PG-hydroxyethylcellulose stearyldimonium  
 chloride  
 Polyethylene, ionomer  
 Polyethylene, micronized  
 Polyethylene, oxidized  
 Polyglyceryl-2 polyhydroxystearate

	Methylchloroisothiazolinone	Cocodimonium hydroxypropyl hydrolyzed wheat protein
	Methyldibromo glutaronitrile	Cocoyl hydrolyzed collagen
	Methylisothiazolinone	Collagen, C. phthalate
	Methylparaben	Collagen amino-polysiloxane hydrolyzate
5	Mushroom ( <i>Cordyceps sabolifera</i> ) extract	Deoxyribonucleic acid
	Myrtrimonium bromide	Desamido collagen
	Pentasodium pentetate	Elastin amino acids
	Pentetic acid	Embryo extract
	Phenethyl alcohol	Ethyl ester of hydrolyzed animal protein
10	Phenol	Fibronectin
	Phenyl mercuric acetate	Gelatin
	o-Phenylphenol	Human placental protein
	Polyaminopropyl biguanide	Hydrolyzed collagen
	Polymethoxy bicyclic oxazolidine	Hydrolyzed extensin
15	Potassium sorbate	Hydrolyzed fish protein
	Propylparaben	Hydrolyzed hemoglobin
	Quaternium-15	Hydrolyzed keratin
	Salicylic acid	Hydrolyzed lactalbumin
	Sodium benzoate, S. bisulfate	Hydrolyzed milk protein
20	Sodium butylparaben, S. dehydroacetate	Hydrolyzed soy flour
	Sodium erythorbate, S. ethyl paraben	Hydrolyzed sweet almond protein
	Sodium hydroxymethylglycinate	Hydroxypropyltrimonium hydrolyzed collagen
	Sodium metabisulfite, S. methylparaben	Isostearyl hydrolyzed collagen
	Sodium o-phenylphenate	Keratin
25	Sodium propionate, S. propylparaben	Lactoferrin
	Sodium pyrithione, S. salicylate	Lactoglobulin
	Sodium sulfite	Lauryldimonium hydroxypropyl hydrolyzed collagen
	Sorbic acid	Marine collagen
	Tetrasodium EDTA	Methylsilanol elastinate
30	Thimerosal	Potassium abietoyl hydrolyzed collagen
	Thymol	Potassium cocoyl hydrolyzed collagen
	Tris (hydroxymethyl) nitromethane	Potassium myristoyl hydrolyzed collagen
	Trisodium EDTA, T. HEDTA	Potassium oleoyl hydrolyzed collagen
	Usnic acid	Potassium undecylenoyl hydrolyzed collagen
35	Zinc PCA	Propyltrimonium hydrolyzed collagen
	<b>Propellant</b>	Propyltrimonium hydrolyzed soy protein
	Butane	Propyltrimonium hydrolyzed wheat protein
	Dimethyl ether	Protein hydrolysates
40	Hydrofluorocarbon 152a	Quaternium-79 hydrolyzed keratin
	Isobutane	Quaternium-79 hydrolyzed silk
	Propane	Rice peptide
	<b>Protein</b>	RNA
45	Albumen	Serum albumin, S. protein
	Atelocollagen	Silk powder
	Bletia hyacinthina extract	Sodium caseinate
	Chrysanthemum morifolium extract	Sodium cocoyl hydrolyzed collagen
	Cocodimonium hydroxypropyl hydrolyzed collagen	Sodium cocoyl hydrolyzed soy protein
50	Cocodimonium hydroxypropyl hydrolyzed keratin	Sodium myristoyl hydrolyzed collagen
	Cocodimonium hydroxypropyl hydrolyzed soy protein	Sodium oleoyl hydrolyzed collagen
		Sodium stearoyl hydrolyzed collagen
		Sodium undecylenoyl hydrolyzed collagen

- Sodium/TEA-lauroyl hydrolyzed collagen  
 Sodium/TEA-lauroyl hydrolyzed keratin  
 Soluble collagen  
 Soluble keratin  
 5 Soluble wheat protein  
 Soy (Glycine soja) protein  
 Steardimonium hydroxypropyl hydrolyzed collagen  
 10 Steartrimonium hydroxyethyl hydrolyzed collagen  
 TEA-cocoyl hydrolyzed collagen  
 TEA-cocoyl hydrolyzed soy protein  
 TEA-lauroyl collagen amino acids  
 TEA-lauroyl keratin amino acids  
 Trachea hydrolysate  
 15 Triethonium hydrolyzed collagen ethosulfate  
 Wheat (Triticum vulgare) germ extract, protein  
 Wheat amino acids  
 Wheat peptide  
 Wheat protein  
 20 **Protein, hydrolyzed**  
 Ethyl ester of hydrolyzed silk  
 Hydrolyzed casein  
 Hydrolyzed elastin  
 25 Hydrolyzed mushroom (*Tricholoma matsutake*) extract  
 Hydrolyzed pea protein  
 hydrolyzed rice protein  
 Hydrolyzed serum protein  
 30 Hydrolyzed silk  
 Hydrolyzed soy protein  
 Hydrolyzed vegetable protein  
 Hydrolyzed wheat protein  
 Hydroxypropyltrimonium hydrolyzed casein  
 35 Hydroxypropyltrimonium hydrolyzed silk  
 Hydroxypropyltrimonium hydrolyzed soy protein  
 Hydroxypropyltrimonium hydrolyzed wheat protein  
 40 **Reducing agent**  
 Dimyristyl thioldipropionate  
 Hydrolyzed zein, iodized  
 Hydrolyzed zein, sulfurized  
 Zinc formaldehyde sulfoxylate  
 45 **Refatting agent**  
 Caprylic/capric triglyceride PEG-4 esters  
 Cocamide MIPA  
 Diisostearyl dimer dilinoleate  
 50 Hydrogenated palm kernel glycerides  
 Isostearyl erucate, I. isostearate  
 Lecithin  
 Liposomes

Magnesium sulfate hepta-hydrate  
 Octyldodecyl behenate, O. myristate  
 bis-Octyldodecyl stearyl dimer dilinoleate  
 Octyldodecyl stearyl stearate  
 Octyl hydroxystearate  
 PEG-3 stearate  
 PEG-4 oleamide  
 PEG-6 capric/caprylic glycerides  
 PEG-7 glyceryl cocoate  
 PEG-16  
 Propylene glycol dipelargonate

**Resin**

Acrylates/hydroxyesters acrylates copolymer  
 Ethylene vinyl acetate  
 Glyceryl abietate  
 Methacrylol ethyl betaine/acrylates copolymer  
 4-Methyl benzenesulfonamide  
 Polypropylene  
 Polyquaternium-16, -44  
 Sucrose benzoate

**Sequestrant**

Calcium acetate, C. phosphate, C. sulfate  
 Encapsulation and entrapment systems  
 Pentasodium triphosphate  
 Phosphoric acid  
 Potassium phosphate, P. sodium tartrate  
 Silicon dioxide hydrate  
 Sodium citrate, S. gluconate  
 Sorbitol  
 Tartaric acid  
 Tripotassium EDTA  
 Trisodium NTA

**Silicone**

Amino bispropyl dimethicone  
 Ammonium dimethicone copolyol sulfate  
 Amodimethicone  
 Behenoxy dimethicone  
 C16-18 alkyl methicone  
 Cetyl dimethicone copolyol  
 Cyclomethicone  
 Diisodecyl adipate  
 Diisostearyl trimethylolpropane siloxy silicate  
 Dimethicone  
 Dimethicone copolyol  
 Dimethicone copolyol almondate  
 Dimethicone copolyol isostearate  
 Dimethicone copolyol olivate, D.c. phthalate  
 Dimethicone copolyolamine  
 Dimethiconol fluoroalcohol dilinoleic acid  
 Dimethiconol hydroxystearate, D. stearate

- 5 Diphenyl dimethicone  
Disodium-PG-propyldimethicone thiosulfate  
Isopropyl hydroxybutyramide dimethicone  
copolyol  
Methicone  
Octamethyl cyclotetrasiloxane  
Phenyl methicone, P. trimethicone  
Polyether Trisiloxane  
Polymethylsilsequioxane  
10 Polysilicone-8  
Quaternium-80  
Silicone quaternium-1; -8  
Sodium-PG-propyl thiosulfate dimethicone  
Stearoxymethicone/dimethicone copolymer  
15 Trimethylsilylamodimethicone

**Skin calming agent**

- 20 Cornflower (*Centaurea cyanus*) extract  
Fennel (*Foeniculum vulgare*) extract  
Fenugreek extract  
Linden (*Tilia cordata*) extract  
Valerian (*Valeriana officinalis*) extract

**Skin cleanser**

- 25 Dog rose (*Rosa canina*) hips extract  
Papaya (*Carica papaya*) extract  
Peach (*Prunus persica*) extract  
Rose (*Rosa multiflora*) extract  
Willow (*Salix alba*) extract  
30

**Skin conditioner**

- Artemisia apiacea extract  
Astrocaryum tucuma extract  
Bactris gasipaes extract  
35 Biotin  
Bishydroxyethyl biscetyl malonamide  
Bletia hyacinthina extract  
Borage (*Borago officinalis*) seed oil  
Borageamidopropyl phosphatidyl PG-dimonium  
40 chloride  
Carbocysteine  
Catalpa kaempfera extract  
Coco phosphatidyl PG-dimonium chloride  
Cocodimonium hydroxypropyl hydrolyzed keratin  
45 Collagen amino acids  
Cyclomethicone  
Dimethicone, D. copolyol acetate  
Embllica officinalis extract  
Equisetum arvense extract  
50 Ethyl ester of hydrolyzed animal protein  
Evening primrose (*Oenothera biennis*) oil  
Fomes fometarius extract  
Fomistopsis officinalis oil

- Gelatin  
Ginseng hydroxypropyltrimonium chloride  
butylene glycol  
Glycolipids  
Glycosphingolipids  
Gnetum amazonicum extract  
Honey (Mel)  
Hydrolyzed carbolipoprotein  
Hydrolyzed elastin  
Hydrolyzed pea protein  
Hydrolyzed rice protein  
Hydrolyzed serum protein  
Hydrolyzed silk  
Hydrolyzed soy protein  
Hydrolyzed vegetable protein  
Hydrolyzed wheat protein  
Inga edulis extract  
Kiwi (*Actinidia chinensis*) fruit extract  
Laminaria japonica extract  
Lecithin  
Marsilea minuta extract  
Nettle (*Urtica dioica*) extract  
Palmitamidodecanediol  
Pearls (*Margarita margarita*)  
PEG-42 Ebiriko ceramides extract  
Phenyl trimethicone  
Phytantriol  
Polygonum multiflorum extract

- Potassium cocoyl hydrolyzed collagen  
Retinyl palmitate polypeptide  
Salvia miltiorrhiza extract  
Silt  
Sodium cocoyl hydrolyzed collagen  
Soluble transgenic elastin  
Steartrimonium hydroxyethyl hydrolyzed collagen  
Stearyl methicone

**Skin healing**

- Calendula officinalis extract  
Glycoproteins  
Hydrocotyl (*Centella asiatica*) extract  
Oat (*Avena sativa*) extract  
Sandalwood (*Santalum album*) extract  
Spearmint (*Mentha viridis*) extract

**Skin lightening/whitening agent**

- Ascorbic acid polypeptide  
Bearberry (*Arctostaphylos uva-ursi*) extract  
Hydroquinone-beta-D-glucopyranoside  
Lemon (*Citrus medica limonum*) peel extract  
Pearls (*Margarita margarita*)

Skin protectant

- 5 Acetylmethionyl methylsilanol elastinate  
Allantoin, A. aluminum hydroxide  
Aloe barbadensis, A.b. extract  
Aluminum starch octenylsuccinate  
Anise (*Pimpinella anisum*) extract  
Arnica montana extract  
Artemisia apiacea extract  
Ascorbyl methylsilanol pectinate  
10 Astrocaryum tucuma extract  
Bactris gasipaes extract  
Betaglucan  
Bishydroxyethyl biscetyl malonamide  
Bletia hyacinthina extract  
15 C18-70 Isoparaffin  
Calendula amurensis extract  
Carboxymethyl chitin  
Carcinia cambogia extract  
Carrot (*Daucus carota*) extract  
20 Carrot (*Daucus carota sativa*) oil  
Catalpa kaempfera extract  
Chenopodium album extract  
Chitosan  
Chrysanthemum morifolium extract  
25 Collagen  
Corn poppy (*Papaver rhoeas*) extract  
Crataegus cuneata extract  
Crataegus monogina extract  
Cypress (*Cupressus sempervirens*) extract  
30 Dimethicone  
Dimethiconol fluoroalcohol dilinoleic acid  
Dimethiconol hydroxystearate, D. stearate  
Dimethylsilanol hyaluronate  
Echitea glauca extract  
35 Embryo extract  
Entada phaseoloides extract  
Equisetum arvense extract  
Euphatorium fortunei extract  
Euterpe precatoria extract  
40 Fenugreek extract  
fornistopsis officinalis oil, F. pinicola extract  
Galla sinensis extract  
Gentian (*Gentiana lutea*) extract  
Gleditsia sinensis extract  
45 Glyceryl ricinoleate  
Glycolipids  
Hierochloe odorata extract  
Hyaluronic acid  
Hydrogenated lecithin  
50 Hydrolyzed lupine protein  
Hydrolyzed milk protein  
Hydrolyzed mushroom (*Tricholoma matsutake*)  
extract

- Isodecyl salicylate  
Jojoba (*Buxus chinensis*) oil  
Lady's Thistle (*Silybum marianum*) extract  
Laminaria japonica extract  
Ligusticum jeholense extract  
Liposomes  
Magnolis spp. extract  
Mango kernel oil  
marsilea minuta extract  
Melaleuca hypericifolia extract  
Melaleuca uncinata extract  
Melaleuca wilsonii extract  
Methylsilanol tri PEG-8 glyceryl cocoate  
Oat (*Avena stiva*) meal  
Oyster (*Ostrea*) shell extract  
Palmitamidodecanediol  
Pearls (*Margarita margarita*)  
Pentahydrosqualene  
Perfluorodecalin  
Perfluoropolymethylisopropyl ether  
Petrolatum  
PEG-8/SMDI copolymer  
PEG-42 Ebiriko ceramides extract  
Pfaffia spp. extract  
Phospholipids  
Plankton extract  
Polygonum multiflorum extract  
Pongamol  
PPG-12/SMDI Copolymer  
PPG-51/SMDI Copolymer  
Propyltrimonium hydrolyzed collagen  
Quinoa (*Chenopodium quinoa*) extract, oil  
Salvia miltiorrhiza extract  
Sambucus nigra extract  
Shark liver oil  
Shorea robusta extract  
Sodium chondroitin sulfate  
Soluble transgenic elastin  
Steartrimonium hydroxyethyl hydrolyzed collagen  
Sterculia platanifolia extract  
Superoxide dismutase  
Trachea hydrolysate  
Wheat (*Triticum vulgare*) germ extract, protein  
White nettle (*Lamium album*) extract  
Withania somniferum extract  
Xanthozylum bunganum extract  
Zinc oxide

Skin smoothing agent

- Althea officinalis extract  
Coltsfoot (*Tussilago farfara*) leaf extract  
Comfrey (*Symphytum officinale*) leaf extract



- Plantain (*Plantago major*) extract  
Sericin
- Skin softening**
- 5 Clays (white, yellow, red, green, pink)  
Cucumber (*Cucumis sativus*) extract  
Kelp (*Macrocystis pyrifera*) extract  
Peach (*Prunus perisca*) extract  
Phenethyl dimethicone
- 10 **Skin soothing**  
Calendula officinalis extract  
Cherry bark extract  
Cucumber (*Cucumis sativus*) extract  
15 Garlic (*Allium sativum*) extract  
Hyssop (*Hyssopus officinalis*) extract  
Jasmine (*Jasminum officinale*) extract  
Kelp (*Macrocystis pyrifera*) extract  
Mango kernel oil  
20 Meadowsweet (*Spiraea ulmaria*) extract  
Quince (*Pyrus cydonia*) seed extract  
Slippery elm extract  
Valerian (*Valeriana officinalis*) extract  
Willow (*Salix alba*) extract  
25 Witch hazel (*Hamamelis virginiana*) extract
- 
- Solubilizer**
- 30 Acetyl monoethanolamine  
Almond oil PEG-6 esters  
2-Aminobutanol  
Aminoethyl propanediol  
Aminomethyl propanediol, A. propanol  
Apricot kernel oil PEG-6 esters  
35 Benzalkonium chloride  
Butoxydiglycol  
Butyl glucoside  
Butylene glycol  
Butyloctanol  
40 Capric-caprylic mono-diglyceride  
Capryl caprylylglucoside  
Caprylic/capric triglyceride  
Caprylic/capric/linoleic triglyceride  
Caprylic/capric/oleic triglycerides  
45 Caprylyl/capryl glucoside  
Cetareth-20  
Ceteth-10  
Cetyl PPG-2 isodeceth-7 carboxylate  
Cholesterol  
50 Corn oil PEG-6 esters  
Decaglycerol monodioleate  
Diethanolamine  
Dilaureth-10 phosphate

- Dimethyl octynediol  
Dioleth-8 phosphate  
Glycereth-7 -26  
Glyceryl caprylate, G. dilaurate  
Glyceryl caprylate/caprinate  
Isoeicosane  
Isopropanolamine  
Isosteareth-20  
Laneth-5, -15  
Laureth-23  
Methylated cyclodextrin  
Myreth-3  
Myreth-3-octanoate  
Nonoxynol-10, -12, -14, -40, -50  
Octoxynol-11, -40  
Oleoamphohydroxypropylsulfonate  
Oleth-3, -5, -10, -15, -20, -25, -50  
Oleth-20 phosphate  
PEG-4, -6, -8, -12, -16, -20, -32, -40  
PEG-4 dilaurate  
PEG-6 capric/caprylic glycerides  
PEG-6 methyl ether  
PEG-8 distearate  
PEG-12 laurate  
PEG-15 castor oil  
PEG-18 stearate  
PEG-20 glyceryl isostearate, P.g. laurate  
PEG-20 glyceryl oleate, P.g. stearate  
PEG-20 methyl glucose sesquistearate  
PEG-20 sorbitan isostearate  
PEG-20 sorbitan triisostearate  
PEG-24 hydrogenated lanolin  
PEG-25 castor oil  
PEG-25 hydrogenated castor oil  
PEG-30 castor oil  
PEG-30 glyceryl cocoate  
PEG-30 glyceryl isostearate  
PEG-30 glyceryl laurate  
PEG-30 glyceryl oleate  
PEG-30 glyceryl stearate  
PEG-33 castor oil  
PEG-35 castor oil  
PEG-36 castor oil  
PEG-40 castor oil  
PEG-40 glyceryl laurate, P.g. stearate  
PEG-40 hydrogenated castor oil  
PEG-40 hydrogenated castor oil PCA isostearate  
PEG-40 sorbitan diisostearate  
PEG-45 palm kernel glycerides  
PEG-48 hydrogenated castor oil  
PEG-50 castor oil  
PEG-50 hydrogenated castor oil  
PEG-60 almond glycerides

- PEG-60 castor oil  
 PEG-60 corn glycerides  
 PEG-60 glyceryl isostearate, P. g. stearate  
 PEG-60 hydrogenated castor oil  
 5 PEG-60 lanolin  
 PEG-70 mango glycerides  
 PEG-75 lanolin  
 PEG-75 shea butter glycerides  
 PEG-75 shorea butter glycerides  
 10 PEG-80 hydrogenated castor oil  
 PEG-80 jojoba acid/alcohol  
 PEG-80 sorbitan laurate  
 PEG-100 castor oil  
 PEG-100 hydrogenated castor oil  
 15 PEG-120 jojoba acid/alcohol  
 PEG-200 trihydroxystearin  
 Poloxamer 407  
 Polyglyceryl-3 oleate  
 Polyglyceryl-6 dioleate  
 20 Polyglyceryl-10 decaoleate, P. tetraoleate  
 Polysorbate 20, 60, 80  
 PPG-2-isodeceth-4, -6, -9, -12  
 PPG-3 isosteareth-9  
 PPG-3 isoceteth-20 acetate  
 25 PPG-5-ceteth-10 phosphate  
 PPG-5-ceteth-20  
 PPG-6-decyltetradeceth-12, -20, -30  
 PPG-12-PEG-65 lanolin oil  
 PPG-15 stearyl ether  
 30 PPG-18 butyl ether  
 PPG-24 butyl ether  
 PPG-26-buteth-26  
 PPG-33 butyl ether  
 PPG-33-buteth-45  
 35 PPG-40-PEG-60 lanolin oil  
 PPG-50 cetyl ether  
 Propylene glycol dicaprylate,  
 dicaprylate/dicaprate  
 Ricinoleamide DEA  
 40 Ricinoleth-40  
 Sodium alpha olefin sulfonate  
 Sodium lauryl sulfate  
 Sodium methylnaphthalenesulfonate  
 Triethanolamine  
 45 Trioctanoin  
 Tromethamine  
  
**Solvent**  
 Acetic acid  
 50 Acetone  
 Alcohol, A. denat  
 Benzophenone  
 Butoxydiglycol

Butyl acetate  
 n-Butyl alcohol  
 Butyl myristate, B. stearate  
 Butylene glycol  
 C9-11 isoparaffin  
 C10-11 isoparaffin  
 C10-13 isoparaffin  
 Caprylic alcohol  
 Castor (*Ricinus communis*) oil  
 Cetearyl octanoate  
 Cetyl stearyl octanoate  
 Chlorobutanol  
 Decyl alcohol  
 Diethylene glycol  
 Diethylene glycol dibenzoate  
 Diethyl sebacate  
 Diisocetyl adipate  
 Diisopropyl adipate, D. sebacate  
 Dimethyl phthalate  
 Dipropylene glycol  
 Dipropylene glycol dibenzoate  
 Ethoxydiglycol  
 Ethyl acetate, E. lactate  
 Ethyl myristate, E. oleate  
 2-Ethylhexyl isostearate  
 Glycerin  
 Glycofurool  
 Heptane  
 Hexyl alcohol  
 Hexylene glycol  
 Isobutyl stearate  
 Isocetyl salicylate  
 Isodecyl benzoate, I. isononanoate  
 Isodecyl octanoate, I. oleate  
 Isododecane  
 Isoeicosane  
 Isohexadecane  
 Isopropyl alcohol, I. myristate  
 Isostearyl stearyl stearate  
 Laureth-2 acetate  
 Methoxydiglycol  
 Methoxyisopropanol  
 Methyl alcohol  
 Methyl propanediol  
 Methylene chloride  
 MEK  
 MIBK  
 Morpholine  
 Octyl benzoate, O. isononanoate  
 Octyl laurate, O. palmitate  
 Octyldodecyl lactate  
 Olive oil PEG-6 esters  
 Peanut oil PEG-6 esters

	Pentane	Hydroxyoctacosanyl hydroxystearate
	Petroleum distillates	Karaya ( <i>Sterculia urens</i> ) gum
	PEG-6 methyl ether	Laureth-3
	PEG-12	Maltitol
5	PEG-20 hydrogenated castor oil	Methylated cyclodextrin
	PEG-33 castor oil	Oleamide
	PEG-50 glyceryl cocoate	PEG-40 stearate
	Polyglyceryl-2 dioleate	PEG-40/dodecyl glycol copolymer
	Polyglyceryl-3 diisostearate	Perfluoropolymethylisopropyl ether
10	Polyoxyethylene glycol dibenzoate	Polyethylene paste
	Polypropylene glycol dibenzoate	PPG-5 lanolin wax
	PPG-2 myristyl ether propionate	PPG-7-buteth-10
	PPG-3	PPG-10 cetyl ether phosphate
	PPG-20 lanolin alcohol ether	Propylene carbonate, P. glycol alginate
15	Propyl alcohol	PVM/MA decadiene crosspolymer
	Propylene carbonate	Sodium acrylates/vinyl isodecanoate crosspolymer
	Propylene glycol	Sodium carbomer
	Propylene glycol dibenzoate	Sorbitan laurate
	Propylene glycol methyl ether	Stearic hydrazide
20	Propylene glycol myristate	2,2',4,4'-Tetrahydroxybenzophenone
	Pyridine	Tricaprin
	Sesame ( <i>Sesamum indicum</i> ) oil	Tricaprylin
	Stearyl heptanoate	Trilaurin
	Toluene	Trimyristin
25	Xylene	Tripalmitin
		Tristearin
	<b>SPF booster</b>	
	Borjoa sorbilis extract	<b>Stimulant</b>
	Isohexadecyl salicylate	Capsicum frutescens extract
30	Styrene/acrylates copolymer	Eleuthero ginseng ( <i>Acanthopanax senticosus</i> ) extract
	Titanium dioxide	Guarana ( <i>Paullinia cupana</i> ) extract
	Yeast ( <i>Saccharomyces cerevisiae</i> ) extract (Faex)	Lactococcus hydrolysate
		Methylsilanol elastinate
		Methylsilanol hydroxyproline aspartate
		TEA-hydroiodide
		Tocopheryl nicotinate
		Urocanic acid
		Yeast ( <i>Saccharomyces cerevisiae</i> ) extract (Faex)
		Zedoary ( <i>Curcuma zedoaria</i> ) oil
		Zinc DNA
	<b>Stabilizer</b>	<b>Sunscreen</b>
35	Acrylates-VA crosspolymer	Basil ( <i>Basilicum santum</i> ) oil extract
	Acrylates/ceteth-20 methacrylates copolymer	Basil ( <i>Ocimum basilicum</i> ) extract
	Acrylates/steareth-20 methacrylate copolymer	Benzophenone-3 -4
	Acrylates/vinyl isodecanoate crosspolymer	3-Benzylidene camphor
	Alkyldimethylamine oxide	Borjoa sorbilis extract
40	C10 polycarbamyl polyglycol ester	C12-15 alkyl benzoate
	Calcium alginate	Coffee ( <i>Coffea arabica</i> ) bean extract
	Cocamidopropyl dimethylamine lactate	Ethyl salicylate
	Cocamine oxide	Glyceryl PABA
	Colloidal silica sols	Homosalate
45	Cyclodextrin	
	Disodium EDTA	
	Gellan gum	
	Glyceryl diisostearate, G. stearate SE	
	Glyceryl mono-di-tri-caprylate	
50	Hydrogenated coco-glycerides	
	Hydrogenated C12-18 triglycerides	
	Hydrogenated tallow glycerides	
	Hydrolyzed oat flour	

- Hydroquinone-beta-D-glucopyranoside  
Isoamyl p-methoxycinnamate  
Isopropylbenzyl salicylate  
Job's tears (Coix lacryma-jobi) extract  
5 Menthyl anthranilate  
Octyl dimethyl PABA, O. methoxycinnamate  
Octyl salicylate, O. triazone  
Oryzanol  
Pansy (Viola tricolor) extract  
10 PEG-25 PABA  
Phenylbenzimidazole sulfonic acid  
Rice (Oryza sativa) bran oil  
TEA-salicylate  
Titanium dioxide  
15 Sunscreen UVB  
Benzophenone-5  
Eclipta alba extract  
PEG-25 PABA  
20 Steareth-100  
Tridecyl salicylate  
Superfating agent  
Linoleamide DEA  
25 PEG-20 almond glycerides  
PEG-60 lanolin  
PEG-75 lanolin  
Surfactant  
30 Alkyl dimethyl betaine  
Alkyldimethylamine oxide  
Ammonium cocoyl sarcosinate  
Ammonium C12-15 alkyl sulfate  
Ammonium dimethicone copolyol sulfate  
35 Ammonium laureth-5 sulfate  
Ammonium laureth-12 sulfate  
Ammonium laureth sulfate  
Ammonium lauroyl sarcosinate  
Ammonium lauryl sulfate, A.I. sulfosuccinate  
40 Ammonium myreth sulfate  
Ammonium nonoxynol 4 sulfate  
Azelamide MEA  
C20-40 alcohol ethoxylate  
C30-50 alcohol ethoxylate  
45 C40-60 alcohol ethoxylate  
Calcium dodecylbenzene sulfonate  
Calcium laurate  
Ceteareth-2 phosphate  
Ceteareth-5 phosphate  
50 Ceteareth-10 phosphate  
Cetolet-25  
Cetyl betaine, C. phosphate  
Cocamide MEA ethoxylate  
Cocamidopropyl betaine, potassium salt  
Cocamidopropyl betaine ammonium salt  
Cocamidopropyl hydroxy sultaine  
Cocamidopropyl hydroxy sultaine, ammonium salt  
Cocamidopropyl hydroxy sultaine, potassium salt  
Cocamidopropylamine oxide  
Coceth-7 carboxylic acid  
Coco-glucoside  
Cocoamphodiacetate lauryl-laureth sulfate  
Cocoamphodiacetate lauryl sulfate  
Cocoamphodiacetate trideceth sulfate  
Coco phosphatidyl PG-dimonium chloride  
N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Cocoyl glutamic acid  
Cocoyl hydrolyzed soy protein  
Cocoyl hydroxyethyl imidazoline  
C11-15 pareth-9, -12, -20, -30, -40  
C12-13 pareth sulfate  
C12-13 pareth-5 carboxylic acid  
C12-15 pareth-12  
C14-15 pareth-8 carboxylic acid  
DEA-oleth-5-phosphate  
DEA-oleth-20-phosphate  
Deceth-3, -6, -8  
Decyltetradeceth-25  
Dicetareth-10 phosphoric acid  
Dimethicone copolyol  
Dimethicone copolyol almondate, D.c. isostearate  
Dimethicone copolyol laurate, D.c. olivate  
Dimethicone copolyol phthalate  
Dimethicone copolyolamine  
Dimethicone propyl PG-betaine  
Diocetyldodeceth-2 lauroyl glutamate  
Diocetyldodeceth-5 lauroyl glutamate  
Diocetyldodecyl lauroyl glutamate  
Disodium capryloamphodiacetate  
Disodium cocoamphodiacetate  
Disodium hydrogenated tallow glutamate  
Disodium laneth-5 sulfosuccinate  
Disodium lauramido MEA-sulfosuccinate  
Disodium laureth sulfosuccinate  
Disodium oleamido MIPA-sulfosuccinate  
Disodium oleamido PEG-2 sulfosuccinate  
Disodium oleth-3 sulfosuccinate  
Disodium ricinoleamido MEA-sulfosuccinate  
Disodium tallamido MEA-sulfosuccinate  
Disteareth-2 lauroyl glutamate  
Disteareth-5 lauroyl glutamate  
Ethoxylated fatty alcohol  
Ethoxylated glycerol sorbitan saturated fatty acid ester

- |    |  |  |
|----|--|--|
|    | Ethoxylated glycerol sorbitan unsaturated fatty acid ester | Polysiloxane-polyether copolymer                 |
|    | Glycereth-25 PCA isostearate                               | Potassium cocoyl glycinate                       |
|    | Glycereth-26 phosphate                                     | Potassium cocoyl hydrolyzed collagen             |
| 5  | glyceryl hydroxystearate                                   | Potassium C9-15 phosphate ester                  |
|    | Hydrogenated tallowoyl glutamic acid                       | Potassium lauroyl hydrolyzed collagen            |
|    | Isopropyl hydroxybutyramide dimethicone copolyol           | Potassium lauryl sulfate                         |
|    | Lauramidopropyl betain                                     | Potassium myristoyl hydrolyzed collagen          |
| 10 | Laureth-1, -2, -3, -4, -7, -12, -16                        | Potassium oleoyl hydrolyzed collagen             |
|    | Laureth-3 carboxylic acid, L. phosphate                    | Potassium palmitate                              |
|    | Laureth-5 carboxylic acid                                  | Potassium undecylenoyl hydrolyzed collagen       |
|    | Laureth-11 carboxylic acid                                 | PPG-2-isodeceth-4, -6, -9, -12                   |
|    | Lauroyl sarcosine  | PPG-6 C12-18 pareth-11                           |
| 15 | Lauryl dimethylamine cyclocarboxypropylolate               | Protein hydrolysates                             |
|    | Laryl hydroxyethyl imidazoline                             | Quaternium-80                                    |
|    | Linoleamide DEA  | Quillaja saponaria extract                       |
|    | Magnesium laureth-8 sulfate                                | Raffinose laurate, R. myristate, R. oleate       |
|    | Meroxapol 105, 171, 172                                    | Raffinose palmitate, R. stearate                 |
| 20 | MEA-lauryl sulfate   | Ricinoleamidopropyl betain                       |
|    | Mixed isopropanolamines myristate                          | Silicone quaternium-1, -8, -9                    |
|    | Myreth-7   | Sodium alpha olefin sulfonate                    |
|    | Myristoyl sarcosine  | Sodium cocoamphoacetate                          |
|    | Myristyl alcohol   | Sodium cocoyl hydrolyzed wheat protein           |
| 25 | Nonoxynol-7, -9, -13, -15                                  | Sodium cocoyl isethionate                        |
|    | Nonoxynol-10 carboxylic acid                               | Sodium C12-13 sulfate                            |
|    | Octoxynol-10, -12  | Sodium C12-14 pareth-2 sulfate                   |
|    | Octyldodeceth-10, -16                                      | Sodium C12-15 pareth-3 sulfonate                 |
|    | Oleoyl sarcosine   | Sodium C12-15 pareth-7 carboxylate               |
| 30 | Oleth-2 phosphate  | Sodium C12-15 pareth-7 sulfonate                 |
|    | Oleth-5 phosphate  | Sodium C12-15 pareth-8 carboxylate               |
|    | Oleyl betaine  | Sodium C12-15 pareth-15 sulfonate                |
|    | Oleyl hydroxyethyl imidazoline                             | Sodium C12-18 alkyl sulfate                      |
|    | Palmitamine oxide  | Sodium C13-17 alkane sulfonate                   |
| 35 | Palmityl betaine   | Sodium C14-16 olefin sulfonate                   |
|    | PCA ethyl cocoyl arginate                                  | Sodium cetearyl sulfate                          |
|    | PEG-7 hydrogenated castor oil                              | Sodium cetyl oleyl sulfate                       |
|    | PEG-8 caprylic/capric glycerides                           | Sodium coco-tallow sulfate                       |
|    | PEG-8 laurate  | Sodium cocoyl glutamate                          |
| 40 | PEG-8 stearate   | Sodium cocoyl hydrolyzed collagen                |
|    | PEG-15 glyceryl stearate                                   | Sodium cocoyl hydrolyzed soy protein             |
|    | PEG-25 glyceryl isostearate                                | Sodium cocoyl sarcosinate                        |
|    | PEG-27 lanolin   | Sodium dimethicone copolyol acetyl methyltaurate |
|    | PEG-30 lanolin   | Sodium hydrogenated tallow glutamate             |
| 45 | PEG-40 castor oil  | Sodium isodecyl sulfate                          |
|    | PEG-40 glyceryl stearate                                   | Sodium laureth-5 carboxylate                     |
|    | PEG-40 jojoba oil, P. lanolin                              | Sodium laureth-11 carboxylate                    |
|    | PEG-60 glyceryl isostearate, P.g. stearate                 | Sodium laureth-13-carboxylate                    |
|    | PEG-80 jojoba oil, P. sorbitan laurate                     | Sodium laureth sulfate                           |
| 50 | PEG-120 jojoba oil   | Sodium lauroamphoacetate                         |
|    | Pentasodium triphosphate                                   | Sodium lauroyl glutamate                         |
|    | Poloxamer 101, 122   | Sodium lauroyl hydrolyzed collagen               |
|    | Polyglyceryl-2 dioleate                                    | Sodium lauroyl sarcosinate, S.I. taurate         |
|    |  | Sodium magnesium laureth sulfate                 |

- Sodium methyl cocoyl taurate  
 Sodium methyl oleoyl taurate  
 Sodium myristoyl glutamate  
 Sodium myristoyl hydrolyzed collagen  
 5 Sodium myristoyl sarcosinate  
 Sodium myristyl sulfate  
 Sodium nonoxynol-6 phosphate  
 Sodium octoxynol-2 ethane sulfonate  
 Sodium octyl sulfate  
 10 Sodium oleoyl hydrolyzed collagen  
 Sodium stearoyl hydrolyzed collagen  
 Sodium trideceth sulfate  
 Sodium undecylenoyl hydrolyzed collagen  
 Sodium/TEA-lauroyl hydrolyzed collagen  
 15 Sodium/TEA-lauroyl hydrolyzed keratin  
 Sorbitan isostearate  
 Stearoyl sarcosine  
 Sulfated castor oil  
 TEA-cocoyl glutamate  
 20 TEA-cocoyl hydrolyzed collagen  
 TEA-cocoyl hydrolyzed soy protein  
 TEA-C12-15 alkyl sulfate  
 TEA-hydrogenated tallow glutamate  
 TEA-lauroyl glutamate  
 25 TEA-lauroyl keratin amino acids  
 TEA-lauroyl sarcosinate  
 TEA-lauryl sulfate  
 TEA-myristoyl hydrolyzed collagen  
 Tocophereth-5 -10 -18 -20 -30 -50 -70  
 30 Trideceth-7 carboxylic acid  
 Trideceth-9  
 Trideceth-19-carboxylic acid  
 Tridecyl ethoxylate  
 Triethanolamine C10-14 sulfate  
 35 Trilauryl phosphate  
 Wheat germamidopropyl betaine  
 Yucca vera extract
- Suspending agent**
- 40 Acrylates/ceteth-20 methacrylates copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Algin  
 Bentonite  
 C10 polycarbamyl polyglycol ester  
 45 Calcium alginate  
 Carbomer, C. 934  
 Carrageenan (Chondrus crispus)  
 Cellulose gum  
 Cetyl hydroxyethylcellulose  
 50 Dihydrogenated tallow phthalic acid amide  
 Distearyl phthalic acid amide  
 Guar (Cyanopsis tetragonoloba) gum  
 Hectorite

Hydroxypropylcellulose  
 Isobutylene/MA copolymer  
 Magnesium aluminum silicate  
 Methylcellulose  
 Pentasodium triphosphate  
 Polyethylene, P. micronized  
 Propylene glycol alginate  
 Quaternium-18 bentonite  
 Quaternium-18 hectorite  
 Sodium magnesium silicate  
 Sodium polynaphthalenesulfonate  
 Stearalkonium bentonite, S. hectorite  
 Steareth-10 allyl ether/acrylates copolymer  
 \_\_\_\_\_ (Astragalus gummifer) gum  
 \_\_\_\_\_ ribehenin  
 \_\_\_\_\_ rihydroxystearin  
 \_\_\_\_\_ omethamine magnesium aluminum silicate  
 \_\_\_\_\_ anthan gum

**Sweetener**

\_\_\_\_\_ saccharin  
 \_\_\_\_\_  
 \_\_\_\_\_ acid  
 \_\_\_\_\_ acid  
 \_\_\_\_\_, ammoniated  
 \_\_\_\_\_ corn starch  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ saccharin  
 \_\_\_\_\_  
 \_\_\_\_\_

**accelerator**

\_\_\_\_\_ tyrosine  
 Carrot (Daucus carota) extract  
 \_\_\_\_\_ acetyl tyrosinate methylsilanol  
 \_\_\_\_\_ droxyacetone  
 \_\_\_\_\_ malyi tyrosinate  
 \_\_\_\_\_ alba extract in white emulsion  
 \_\_\_\_\_ tyrosinate

**ckener**

\_\_\_\_\_ -VA crosspolmer  
 \_\_\_\_\_ /C10-C30 alkyl acrylate crosspolymer  
 \_\_\_\_\_ /ceteth-20 itaconate copolymer  
 \_\_\_\_\_ /ceteth-20 methacrylates copolymer  
 \_\_\_\_\_ /steareth-20 itaconate copolymer  
 \_\_\_\_\_ /steareth-20 methacrylate copolymer  
 \_\_\_\_\_ /steareth-50 acrylate copolymer  
 \_\_\_\_\_ /vinyl isodecanoate crosspolymer  
 \_\_\_\_\_ acid/acrylonitrogens copolymer

- |    |   |   |
|----|---|---|
|    | _____ /magnesium hydroxide stearate       | Hydrogenated rapeseed oil                 |
|    | _____ acrylates/acrylonitrogens copolymer | Hydrogenated starch hydrolysate           |
|    | _____ alginate                            | Hydrogenated talloweth-60 myristyl glycol |
| 5  | _____ alcohol                             | Hydrolyzed oat flour                      |
|    | _____ acid                                | Hydrolyzed transgenic collagen            |
|    | _____ alcohol, B. behenate                | Hydroxyethylcellulose                     |
|    | _____ nite                                |   |
|    | _____ olycarbaryl polyglycol ester        |   |
| 10 | _____ 5 alcohols                          |   |
|    | _____ 6 alcohols                          |   |
|    | _____ 6 acid                              |   |
|    | Calcium alginate                          |   |
|    | Calcium carrageenan                       |   |
| 15 | Caprylic alcohol                          |   |
|    | Carbomer                                  |   |
|    | Carboxymethyl hydroxyethylcellulose       |   |
|    | Carrageenan (Chondrus crispus)            |   |
|    | Cellulose, C. gum                         |   |
| 20 | Cetearyl alcohol, C. behenate             |   |
|    | Cetearyl octanoate, C. stearate           |   |
|    | Cetostearyl stearate                      |   |
|    | Cetyl alcohol                             |   |
|    | Cetyl hydroxyethylcellulose               |   |
| 25 | Cetyl myristate, C. palmitate             |   |
|    | Cocamide                                  |   |
|    | Cocamide MEA, C. MIPA                     |   |
|    | Cocamidopropylamine oxide                 |   |
|    | Coco-betaine                              |   |
| 30 | Coco-rapeseedate                          |   |
|    | Coco/oleamidopropyl betaine               |   |
|    | Cocoyl amido hydroxy sulfo betaine        |   |
|    | Cocoyl monoethanolamide ethoxylate        |   |
|    | Colloidal silica sols                     |   |
| 35 | DEA-hydrolyzed lecithin                   |   |
|    | DEA-linoleate                             |   |
|    | DEA-oleth-3 phosphate                     |   |
|    | DEA oleth-10 phosphate                    |   |
|    | Decyl alcohol                             |   |
| 40 | Dextran                                   |   |
|    | Dextrin                                   |   |
|    | Dilaureth-10 phosphate                    |   |
|    | Dioleth-8 phosphate                       |   |
|    | DMHF                                      |   |
| 45 | Ethoxylated fatty alcohol                 |   |
|    | Gellan gum                                |   |
|    | Glyceryl behenate, G. stearate            |   |
|    | Glyceryl polymethacrylate                 |   |
|    | Guar (Cyanopsis tetragonoloba) gum        |   |
| 50 | Guar hydroxypropyltrimonium chloride      |   |
|    | Hectorite                                 |   |
|    | Hexyl alcohol                             |   |
|    | Hydrated silica                           |   |

- Hydroxypropyl chitosan  
 Hydroxypropyl guar  
 Hydroxypropyl methylcellulose  
 Hydroxypropylcellulose  
 5 Isoceteth-10  
 Isostearamide DEA  
 Isostearamidopropylamine oxide  
 Isostearoamphopropionate  
 Jojoba wax  
 10 Karaya (*Sterculia urens*) gum  
 L \_\_\_\_\_ DEA, L. MEA, L. MIPA  
 L \_\_\_\_\_ midopropyl betaine  
 Laureth-10  
 L \_\_\_\_\_ -linoleic DEA  
 15 L \_\_\_\_\_ -linoleoyl diethanolamide  
 L \_\_\_\_\_ -myristoyl diethanolamide  
 L \_\_\_\_\_ alcohol, L. betaine  
 L \_\_\_\_\_ amide DEA, L. MEA  
 L \_\_\_\_\_ eic acid  
 20 L \_\_\_\_\_ mic acid  
 L \_\_\_\_\_ bean (*Ceratonia siliqua*) gum  
 Magnesium aluminum silicate  
 MDM hydantoin  
 Methylcellulose  
 25 Montmorillonite  
 Myristamide DEA, M. MEA  
 Myristamine oxide  
 Myristyl alcohol  
 Octacosanyl stearate  
 30 Oleamide, O. DEA, O. MEA  
 Palmitamide MEA  
 Pectin  
 PEG-2 laurate  
 PEG-3 distearate, P. lauramide  
 35 PEG-3 lauramine oxide  
 PEG-4 diisostearate, P. oleamide  
 PEG-5M  
 PEG-6 beeswax  
 PEG-7 hydrogenated castor oil  
 40 PEG-8  
 PEG-8 dioleate, P. distearate  
 PEG-8 stearate  
 PEG-9M  
 PEG-12 beeswax  
 45 PEG-18 glyceryl oleate/cocoate  
 PEG-23M  
 PEG-28 glyceryl tallowate  
 PEG-40 jojoba oil  
 PEG-45M  
 50 PEG-50 tallow amide  
 PEG-55 propylene glycol oleate  
 PEG-75 stearate  
 PEG-90M  
 PEG-100 stearate  
 PEG-120 methyl glucose dioleate  
 PEG-150 distearate  
 PEG-150 pentaerythrityl tetrastearate  
 PEG-160M  
 PEG-200 glyceryl stearate  
 PEG-200 glyceryl tallowate  
 Pentaerythrityl tetrabenzenate  
 Pentaerythrityl tetrastearate  
 Poloxamer 105, 124, 185, 237, 238, 338, 407  
 Polyacrylic acid  
 Polysorbate 20  
 Potassium alginate, P. chloride  
 Potassium oleate, P. stearate  
 PPG-5-ceteth-10 phosphate  
 Propylene glycol stearate  
 PVM/MA decadiene crosspolymer  
 PVP  
 Quaternium-18 bentonite  
 Quaternium-18 hectorite  
 Rapeseed oil, ethoxylated high erucic acid  
 Ricinoleamide MEA  
 Sesamide DEA  
 Sodium acrylates/vinyl isodecanoate crosspolymer  
 Sodium carbomer, S. carrageenan  
 Sodium ceteth-13-carboxylate  
 Sodium chloride  
 Sodium magnesium silicate, S. stearate  
 Sorbitan sesquiosostearate, S. tristearate  
 Soyamide DEA  
 Soyamidopropyl betaine  
 Starch polyacrylonitrile copolymer-potassium salt  
 Starch polyacrylonitrile copolymer-sodium salt  
 Stearalkonium bentonite, S. hectorite  
 Stearamide  
 Stearamide DEA, S. MEA, S. MEA-stearate  
 Stearamidopropyl dimethylamine lactate  
 Stearamine oxide  
 Steareth-10 allyl ether/acrylates copolymer  
 Stearic acid  
 Stearyl alcohol  
 Synthetic beeswax  
 Tallowamide MEA  
 TEA-acrylates/acrylonitrile copolymer  
 Tragacanth (*Astragalus gummifer*) gum  
 Tribehenin  
 Trihydroxystearin  
 Tromethamine magnesium aluminum silicate  
 Wheat germamide DEA  
 Wheat germamidopropyl betain  
 Xanthan gum

Thixotrope



Bentonite  
Hectorite  
Sodium magnesium silicate  
Stearalkonium bentonite

5

**Toner**

Althea officinalis extract  
Clover (*Trifolium pratense*) extract  
Dog rose (*Rosa canina*) hips extract  
10 Ginseng (*Panax ginseng*) extract  
Horsetail extract  
Lemon bioflavonoids extract  
Meadowsweet (*Spiraea ulmaria*) extract  
Nettle (*Urtica dioica*) extract  
15 Rose (*Rosa multiflora*) extract  
Rosemary (*Rosmarinus officinalis*) extract

**UVA absorber**

Benzophenone-1, -2, -3, -4, -6, -8, -9, -11, -12  
20 Butyl methoxydibenzoylmethane  
Corallina officinalis  
Isopropyl dibenzoylmethane  
Menthyl anthranilate  
2,2',4,4'-Tetrahydroxybenzophenone  
25 Titanium dioxide  
Zinc oxide

**UVB absorber**

Argania spinosa oil  
30 Benzophenone-1 -2 -3 -4 -6 -9 -11  
Corallina officinalis  
DEA-methoxycinnamate  
Drometizole  
Ethyl dihydroxypropyl PABA  
35 Etocrylene  
homosalate  
Isoamyl p-methoxycinnamate  
Isopropyl methoxycinnamate  
Isopropylbenzyl salicylate  
40 4-Methylbenzylidene camphor  
Octocrylene  
Octrizole  
Octyl dimethyl PABA  
Octyl methoxycinnamate  
45 Octyl salicylate, O. triazne  
PABA  
PEG-25 PABA  
Phenylbenzimidazole sulfonic acid  
Shea butter, ethoxylated  
50 TEA-salicylate  
Titanium dioxide  
TriPABA panthenol  
Zinc oxide

**Vegetable oil**

Apricot (*Prunus armeniaca*) kernel oil  
Avocado (*Persea gratissima*) oil  
Baobab oil  
Calendula officinalis oil  
Chaulmoogra (*Taraktogenos kurzii*) oil  
Coconut (*Cocos nucifera*) oil  
Corn (*Zea mays*) oil  
Cottonseed (*Gossypium*) oil  
Gold of pleasure oil  
Grape (*Vitis vinifera*) seed oil  
Hazel (*Corylus avellana*) nut oil  
Hybrid sunflower (*Helianthus annuus*) oil  
Hydrogenated coconut oil  
Hydrogenated cottonseed oil  
Hydrogenated vegetable oil  
Jojoba (*Buxus chinensis*) oil  
Kukui (*Aleurites moluccana*) nut oil  
Macadamia ternifolia nut oil  
Meadowfoam (*Limnanthes alba*) seed oil  
Mexican poppy oil  
Palm (*Elaeis guineensis*) kernel oil  
Partially hydrogenated soybean oil  
Peach (*Prunus persica*) kernel oil  
Peanut (*Arachis hypogaea*) oil  
Pecan (*Carya illinoensis*) oil  
Pumpkin (*Cucurbita pepo*) seed oil  
Quinoa (*Chenopodium quinoa*) oil  
Rapeseed (*Brassica capestris*) oil  
Rice (*Oryza sativa*) bran oil  
Safflower (*Carthamus tinctorius*) oil  
Seabuckthorn oil  
Sesame (*Sesamum indicum*) oil  
Sisymbrium irio oil  
Soybean (*Glycine soja*) oil  
Sunflower (*Helianthus annuus*) seed oil  
Walnut (*Juglans regia*) oil  
Wheat (*Triticum vulgare*) germ oil  
Wild borage oil

**Vitamin**

Aesculus chinensis extract  
Ascorbic acid  
Ascorbic acid polypeptide  
Ascorbyl palmitate  
Biotin  
Calcium pantothenate  
Cholecalciferol  
Cyanocobalamin  
Eclipta alba extract  
Embllica officinalis extract  
Equisetum arvense extract  
Ergocalciferol

- |    |                                     |  |  |
|----|-------------------------------------|--|--|
|    | Esculin                             |  | Spermaceti                                   |
|    | Ethyl linoleate                     |  | Stearoxymethicone/dimethicone copolymer      |
|    | Folic acid                          |  | Stearoxytrimethylsilane                      |
| 5  | Laminaria japonica extract          |  | Synthetic candelilla wax                     |
|    | Marsilea minuta extract             |  | Synthetic carnauba                           |
|    | Melaleuca bracteata extract         |  |  |
|    | Menadione                           |  |  |
|    | Nasturtium sinensis extract         |  | <u>Wetting agent</u>                         |
|    | Nelumbium speciosum extract         |  | Benzalkonium chloride                        |
| 10 | Niacin                              |  | Benzethonium chloride                        |
|    | Niacinamide, N. ascorbate           |  | Cetalkonium chloride                         |
|    | Nicotinamide                        |  | Cetareth-20                                  |
|    | Nicotinic acid                      |  | Ceteth-20                                    |
|    | Ocimum basilicum extract            |  | Cetyl pyridinium chloride                    |
| 15 | Panthenyl triacetate                |  | Cocoamphodipropionic acid                    |
|    | Pantothenic acid                    |  | Decaglycerol monodiolate                     |
|    | Phytonadione                        |  | Deceth-9                                     |
|    | Pyridoxine HCl                      |  | Dihydroabietyl methacrylate                  |
|    | Retinol                             |  | Dimethicone copolyol methyl ether            |
| 20 | Retinyl acetate, R. palmitate       |  | Dimethicone copolyol phthalate               |
|    | Retinyl palmitate polypeptide       |  | Diocetyl sodium sulfosuccinate               |
|    | Retinyl propionate                  |  | Ethyl hydroxymethyl oleyl oxazoline          |
|    | Riboflavin tetraacetate             |  | Hydroxylated milk glycerides                 |
|    | Sodium ascorbate                    |  | Isolaureth-6                                 |
| 25 | Thiamine HCL                        |  | Lanolin acid                                 |
|    | Tocopherol                          |  | Lauryl pyrrolidone                           |
|    | Tocopheryl acetate, T. succinate    |  | Lecithin                                     |
|    | <u>Wax</u>                          |  | Methyl hydrogenated rosinat                  |
| 30 | Bayberry (Myrica cerifera) wax      |  | Methyl rosinat                               |
|    | Behenoxy dimethicone                |  | Nonyl nonoxynol-5                            |
|    | C16-18 alkyl methicone              |  | Octoxynol-8, 70                              |
|    | Candelilla (Euphorbia cerifera) wax |  | Oleth-15                                     |
| 35 | Carnauba (Copernicia cerifera) wax  |  | Oleth-20 phosphate                           |
|    | Ceresin                             |  | PEG-9 castor oil                             |
|    | Cetyl dimethicone, C. isooctanoate  |  | PEG-15 castor oil                            |
|    | Dialkyldimethylpolysiloxane         |  | PEG-20 glyceryl stearate                     |
|    | Dimethiconol hydroxystearate        |  | PEG-20 sorbitan triisostearate               |
|    | Dimethiconol stearate               |  | PEG-45 palm kernel glycerides                |
| 40 | Hydrogenated castor oil             |  | PEG-60 almond glycerides, P. corn glycerides |
|    | Hydrogenated cottonseed oil         |  | PEG-60 shea butter glycerides                |
|    | Hydrogenated jojoba oil, H.j. wax   |  | PEG-70 mango glycerides                      |
|    | Hydrogenated palm kernel oil        |  | PEG-75 shorea butter glycerides              |
|    | Hydrogenated rapeseed oil           |  | PEG-80 sorbitan laurate                      |
| 45 | Hydrogenated rice bran wax          |  | Poloxamer 123, 181, 182, 184, 235, 334       |
|    | hydrogenated vegetable oil          |  | Polyether trisiloxane                        |
|    | Isooctadecyl isononanoate           |  | Polyglyceryl-3 oleate                        |
|    | Japan (Rhus succedanea) wax         |  | Polyglyceryl-6 dioleate                      |
|    | Jojoba esters                       |  | Polyglyceryl-10 tetraoleate                  |
| 50 | Montan (Montan cera) wax            |  | Polysorbate 60, 80                           |
|    | Ouricury wax                        |  | PPG-2-isodeceth-4, -6, -9, -12               |
|    | Ozokerite                           |  | PPG-10 lanolin alcohol ether                 |
|    | Polyglyceryl-3 beeswax              |  | Propylene glycol                             |
|    |                                     |  | Sodium butoxyethoxy acetate                  |
|    |                                     |  | Sodium capryloamphohydroxypropylsulfonate    |

- 5 Sodium decyl diphenyl ether sulfonate  
Sodium dodecyldiphenyl ether sulfonate  
Sodium lauryl sulfate  
Sulfated castor oil  
Triisocetyl citrate  
Triisostearin PEG-6 esters  
Yucca vera extract

Claims:

1. A cosmetic composition comprising:  
a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component randomly bonded to at least one poly(acrylic acid) component said polymer network capable of aggregation in response to a change in temperature; and  
a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.
2. A cosmetic composition for topical application, comprising:  
a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and  
a cosmetically active agent selected to treat imperfections or disorders of the skin, said carrier and said agent disposed within an aqueous-based medium.
3. The cosmetic composition of claim 1, wherein the cosmetic composition is a shampoo and the cosmetically active agent comprises a cleansing surfactant.
4. The cosmetic composition of claim 1, wherein the cosmetic composition is a moisturizer and the cosmetically active agent comprises a moisturizer.
5. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunscreen and the cosmetically active agent comprises a UV-absorbing agent.
6. The cosmetic composition of claim 1, wherein the cosmetic composition is an acne cream and the cosmetically active agent comprises an antiacne agent.

7. The cosmetic composition of claim 1, wherein the cosmetic composition is a hair straightener and the cosmetic agent comprises a base for increasing the pH.

5 8. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunless tanning lotion and the cosmetically active agent comprises skin tinting agent.

9. The cosmetic composition of claim 1, wherein the cosmetic composition is an antiperspirant and the cosmetically active agent comprises aluminum chlorhydrate.

10 10. The cosmetic composition of claim 1, wherein the cosmetic composition is a shaving cream and the cosmetically active agent comprises an emollient and a foaming surfactant.

15 11. The cosmetic composition of claim 1, wherein the cosmetic composition is a face cosmetic and the cosmetically active agent comprises a pigment.

12. The cosmetic composition of claim 1 or 2, wherein the cosmetic agent comprises a hydrophobic material, wherein the cosmetically acceptable carrier stabilizes the hydrophobic material in the aqueous medium.

13. The cosmetic composition of claim 2, wherein said cosmetic agent selected to treat imperfections or disorders of the skin is selected from the group consisting of acidulents, antiacne agents, anti-aging agents, anti-inflammatories, anti-irritants, antioxidants, depilatories, detergents, disinfectants, emollients, exfoliants, humectants, lubricants, moisturizers, skin conditioners, skin protectants, skin lightening agents, skin soothing agents, sunscreens, and tanning accelerators and mixtures thereof.

30

14. The composition of claim 4, wherein said composition further comprises a cosmetic agent selected from the group consisting of humectants and emollients.

15. The composition of claim 1 or 2, further comprising one or more additives selected from the group consisting of preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances.

16. The composition of claim 1, wherein the cosmetic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, mousses, sprays, aerosols, pad-applied formulations and masks.

17. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 27-40°C.

18. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 30 to 37°C.

19. The composition of claim 1, wherein said composition is formulated as a product selected from the group consisting of baby products, baby shampoos, lotions, powders and creams; bath preparations, bath oils, tablets and salts, bubble baths, bath fragrances, bath capsules; eye makeup preparations, eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover, mascara; fragrance preparations, colognes, toilet waters, powders and sachets; noncoloring hair preparations, hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations, hair dye, hair tints, hair color sprays, hair lighteners and hair bleaches; makeup preparations, face powders, foundations, leg and body paints, lipstick; makeup bases, rouges and makeup fixatives; manicuring preparations, basecoats, undercoats, cuticle softeners, nail creams, nail extenders, nail polish and enamel, and remover, oral hygiene products, dentrifices, mouthwashes; personal cleanliness, bath soaps, detergents, deodorants, douches and feminine hygiene products; shaving preparations, aftershave lotion, beard softeners, men's talcum shaving cream, shaving soap, preshave lotions; skin care preparations, skin cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders; moisturizers, night preparations, paste masks, skin fresheners; and suntan preparations, suntan creams, gels and lotions, and indoor tanning preparations.

20

20. The cosmetic composition of claim 1 or 2, wherein the poloxamer component is present in an amount in the range of about 0.01 to 20 wt% and the poly(acrylic acid) component is present in the amount of about 0.01 to 20 wt%.

25

21. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamers.

30

22. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamer components randomly bonded to a poly(acrylic acid) backbone.

23. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer composition comprises a plurality of poly(acrylic acid) components randomly bonded to a poloxamer component.

5 24. The cosmetic composition of claim 1, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

10 25. The cosmetic compositions of claim 1, further comprising an additive selected to increase transition temperature and increase viscosity of the reversible viscosifying polymer network.

15 26. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and decrease viscosity of the reversible viscosifying polymer network.

20 27. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature without affecting viscosity of the reversible viscosifying polymer network.

28. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and increase viscosity of the reversible viscosifying polymer network.

25 29. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and decrease viscosity of the reversible viscosifying polymer network.



30. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature without affecting viscosity of the reversible viscosifying polymer network.

5 31. The cosmetic composition of claim 1, further comprising an additive selected to increase viscosity without affecting transition temperature of the reversibly viscosifying polymer network.

10 32. The cosmetic composition of claim 1, further comprising an additive selected to decrease viscosity without affecting transition temperature of the reversibly viscosifying polymer network.

15 33. The cosmetic composition of claim 1 or 2, characterized in that the gel remains translucent to light before and after response to the environmental stimulus.

34. The cosmetic composition of claim 1, wherein the poly(acrylic acid) is branched.

20 35. Method of making a cosmetic composition, comprising:  
dissolving a poloxamer capable of aggregation in response to a change in temperature in acrylic acid monomer;  
initiating polymerization of the monomer to form a poly(acrylic acid) randomly bonded to the poloxamer, so as to form a reversibly viscosifying polymer composition;  
mixing the reversibly gelling polymer compositions with a cosmetic agent  
25 which imparts a desired cosmetic effect to the composition.

36. The method of claim 36, wherein a polymerization initiator is selected to provide the polymer network having a selected temperature of viscosification.

30 37. The method of claim 36, wherein one or more poloxamers are added.

38. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer network is present in an amount in the range of 0.01% - 10%.

1 / 34

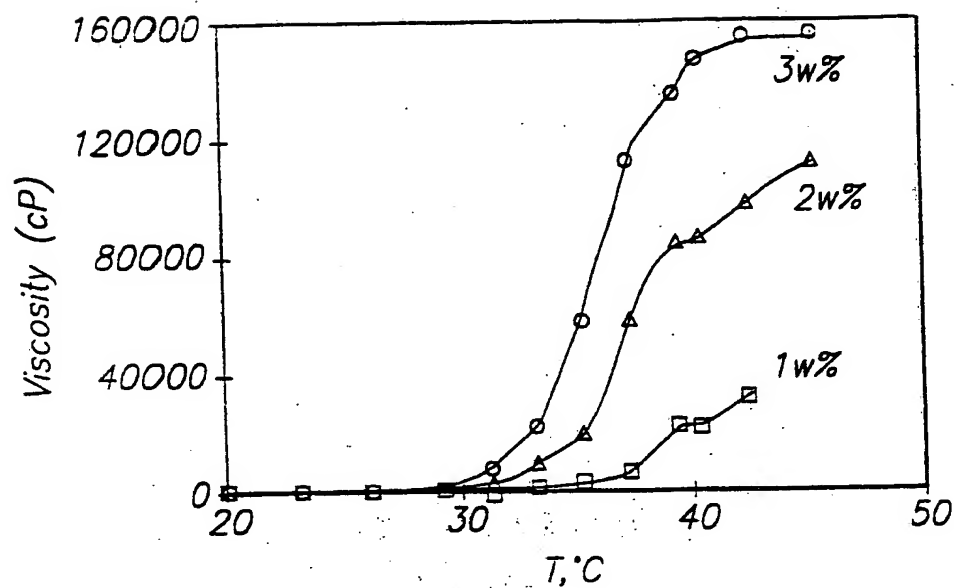


FIG. 1

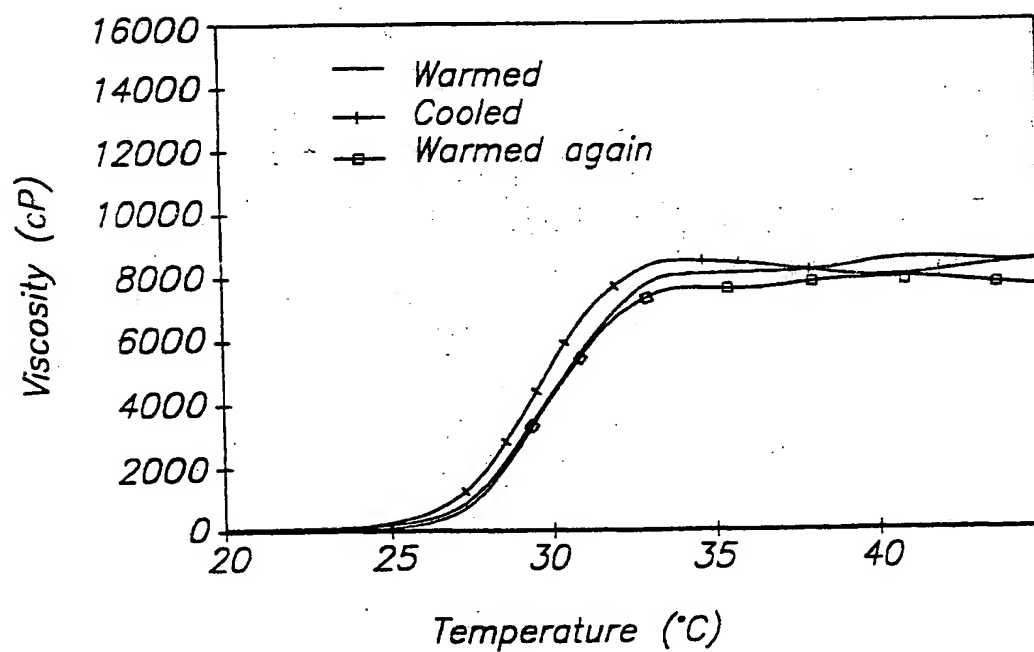


FIG. 2

2 / 34

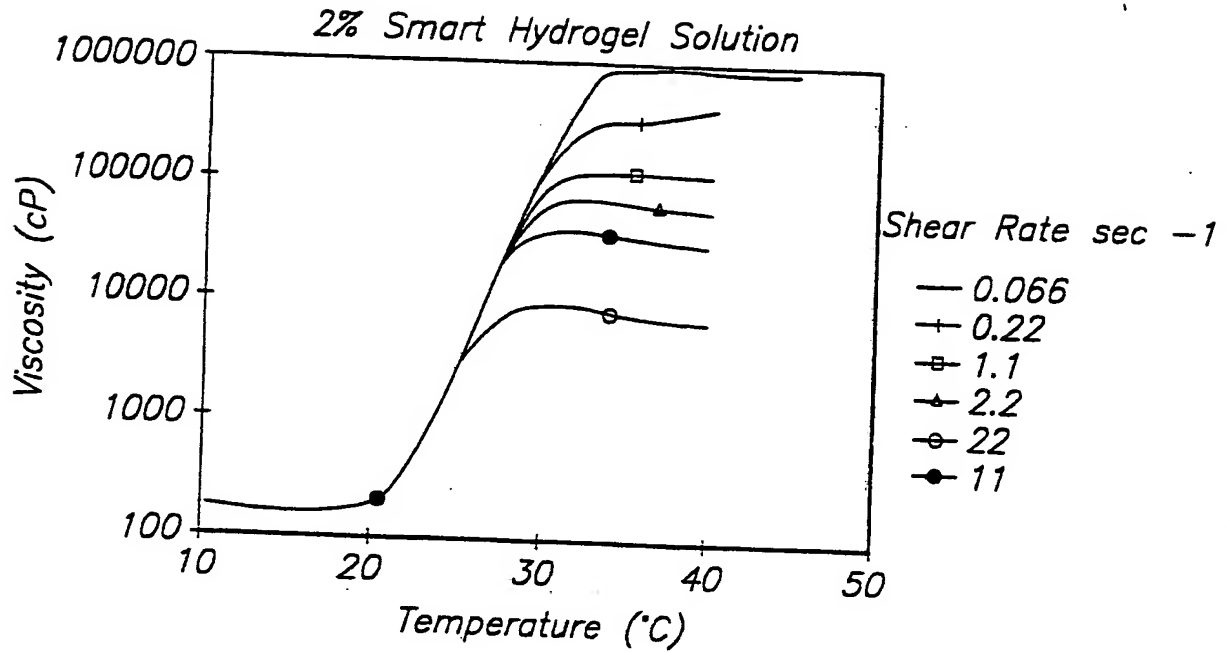


FIG. 3

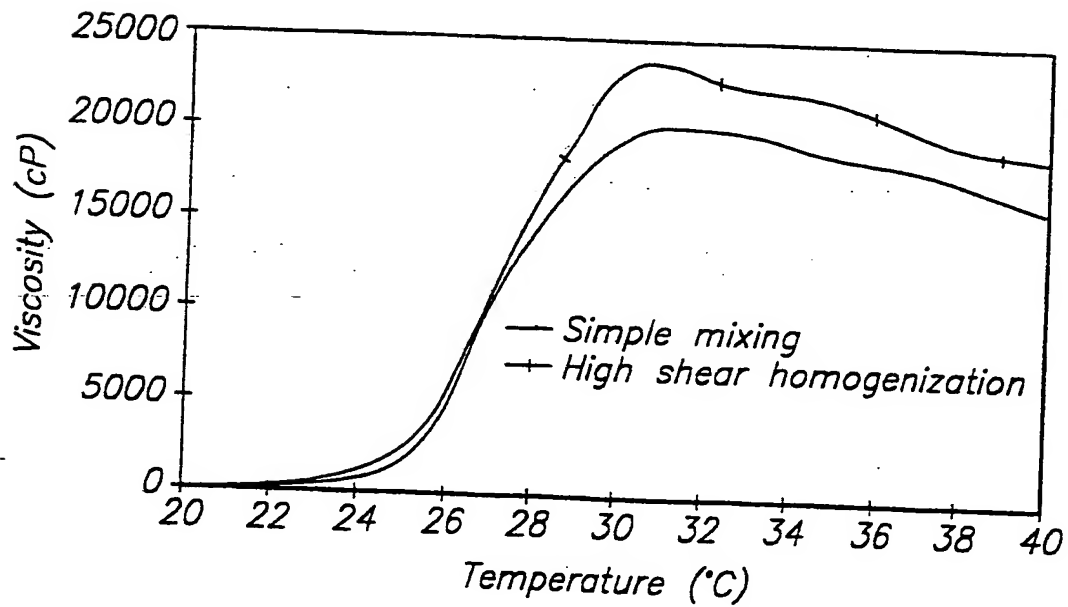


FIG. 4

3 / 34

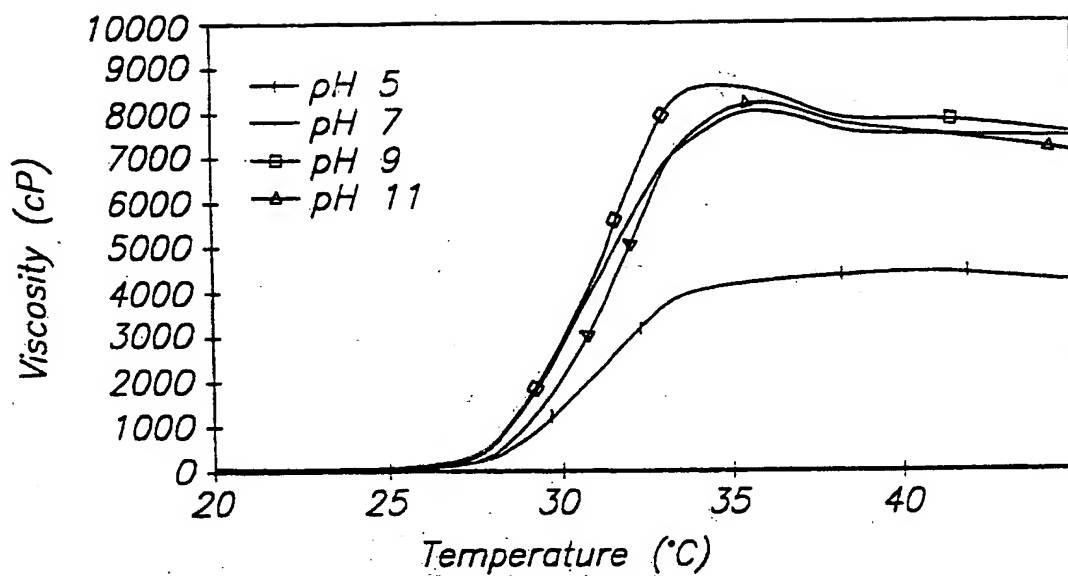


FIG. 5

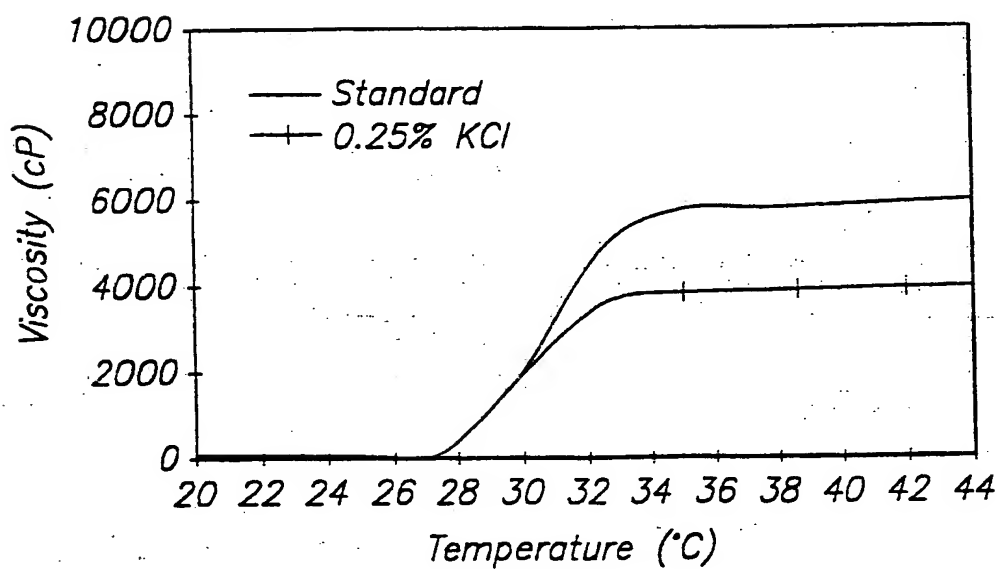


FIG. 6

4 / 34

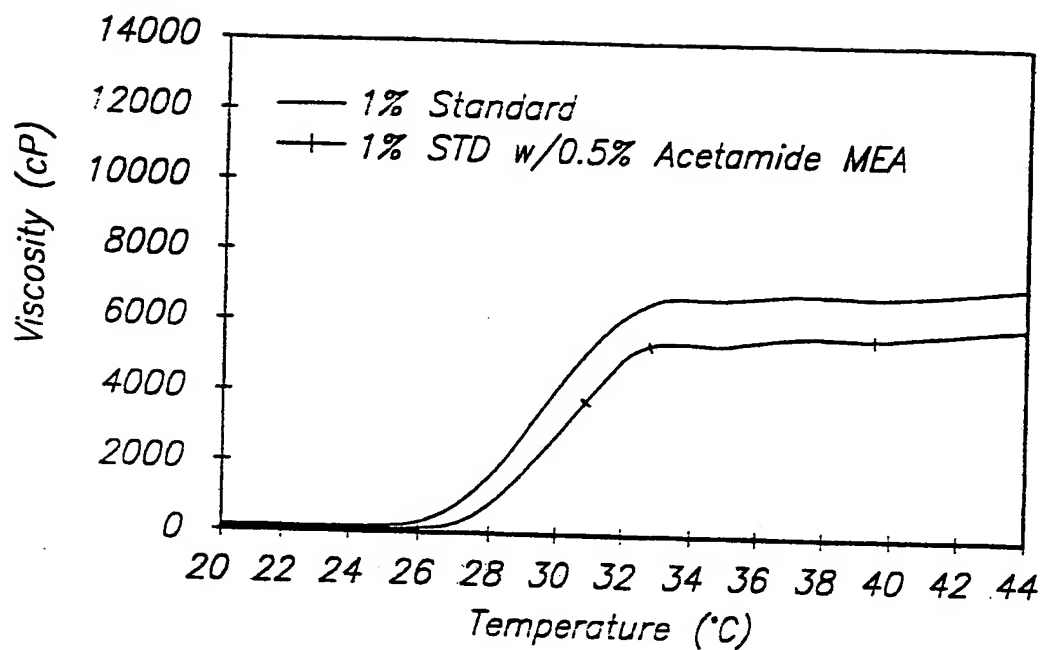


FIG. 7

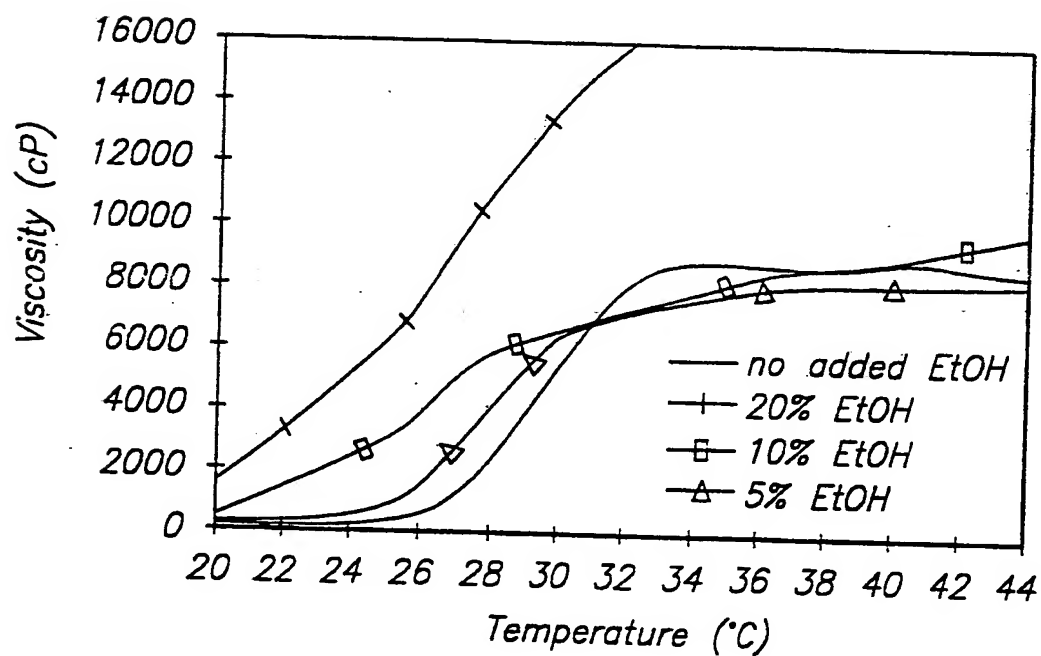
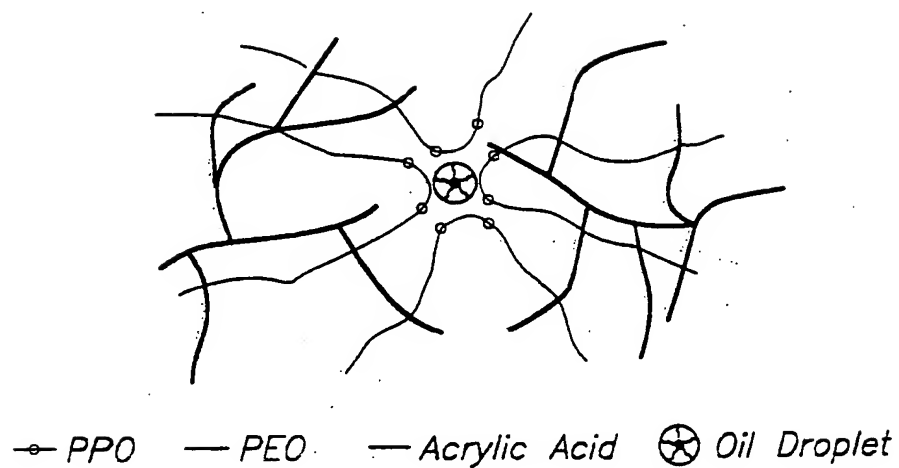
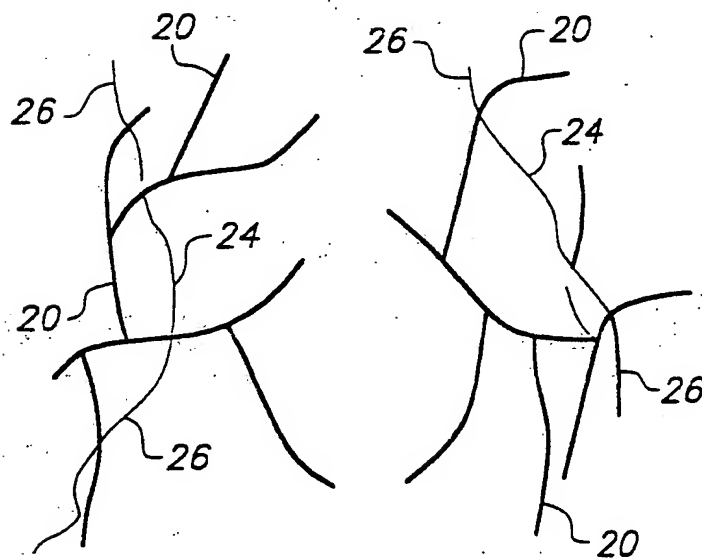
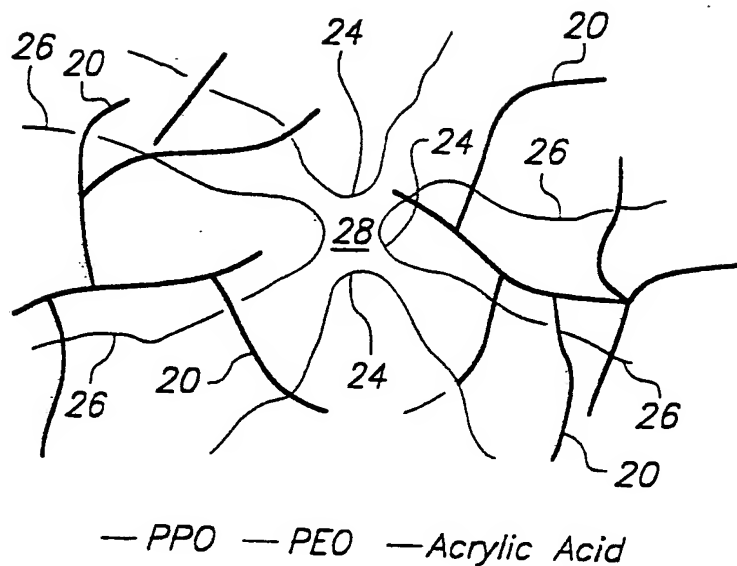
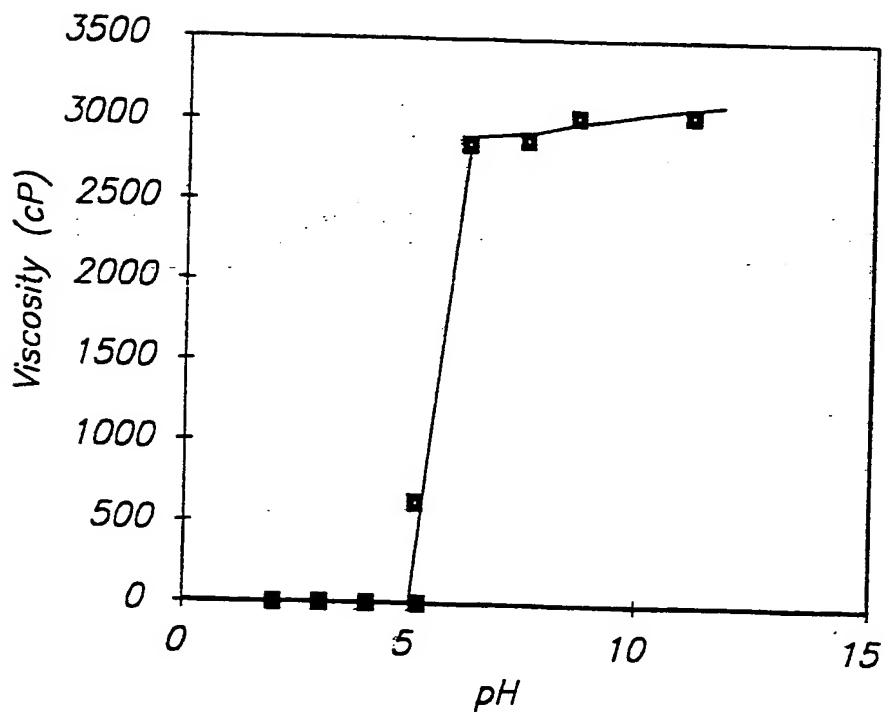


FIG. 8

5/34

**FIG. 9****FIG. 10A**

6 / 34

**FIG. 10B****FIG. 11**



7 / 34

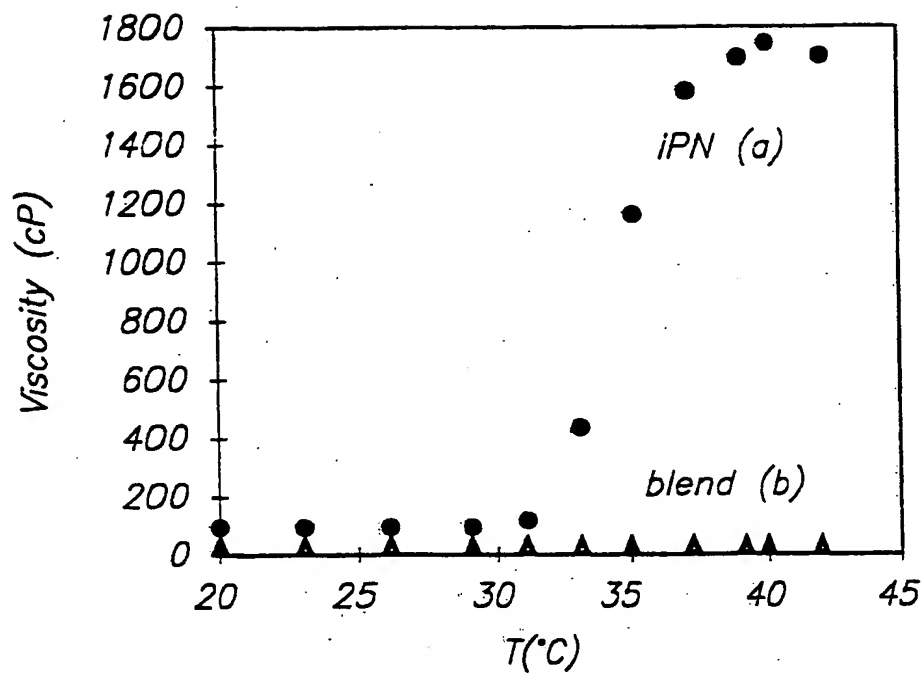


FIG. 12

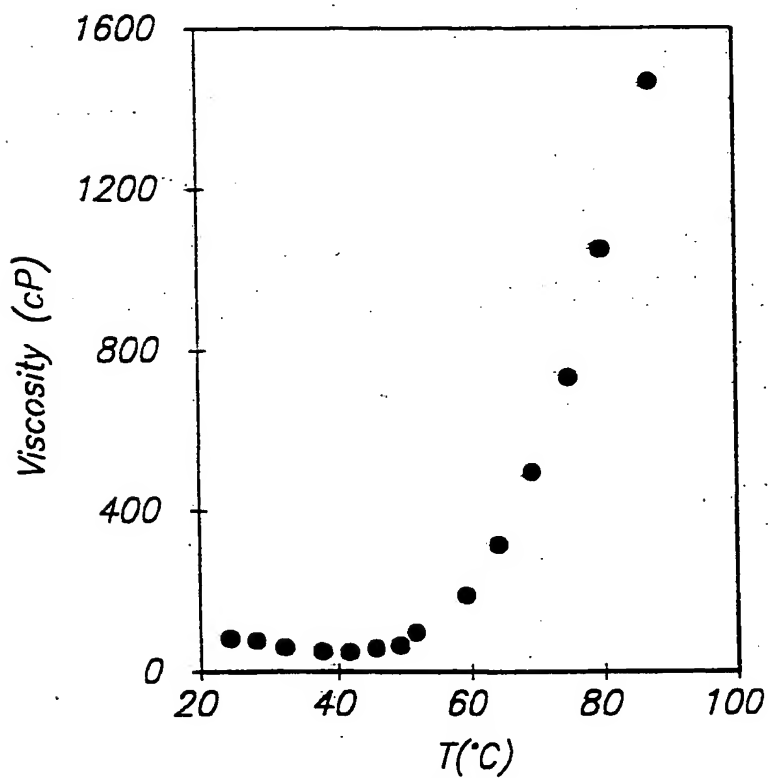
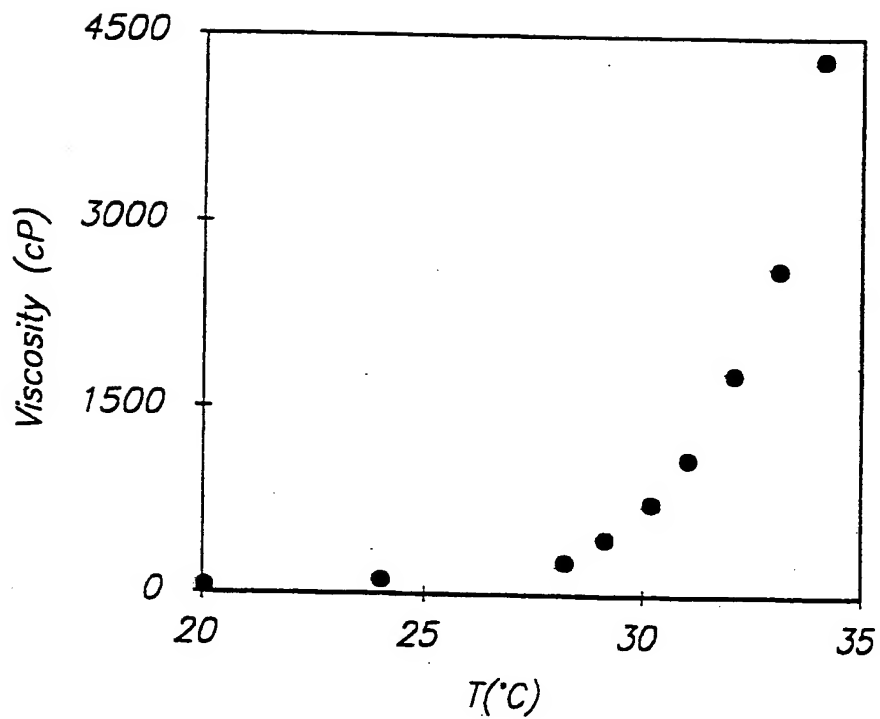
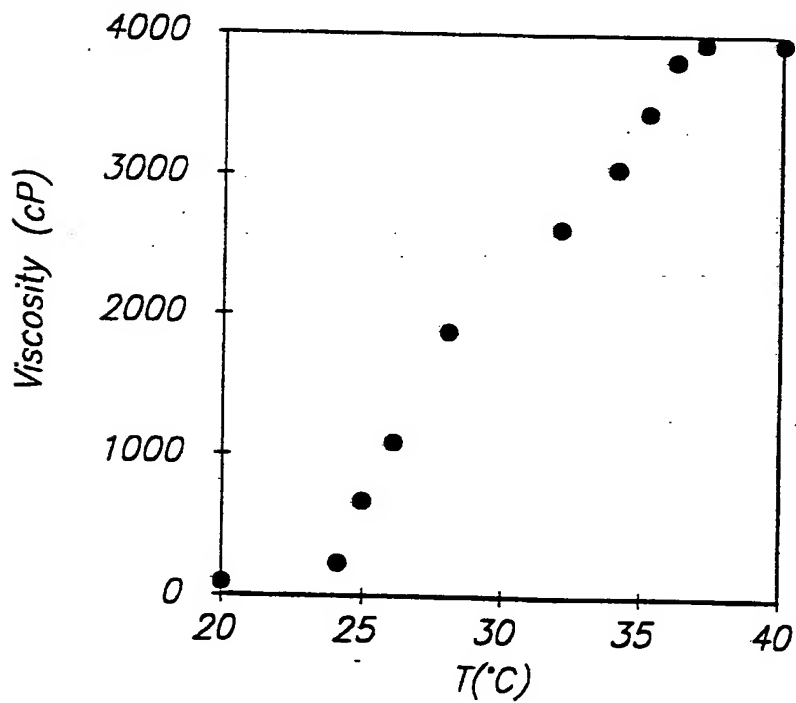


FIG. 13

8 / 34

**FIG. 14****FIG. 15**

9 / 34

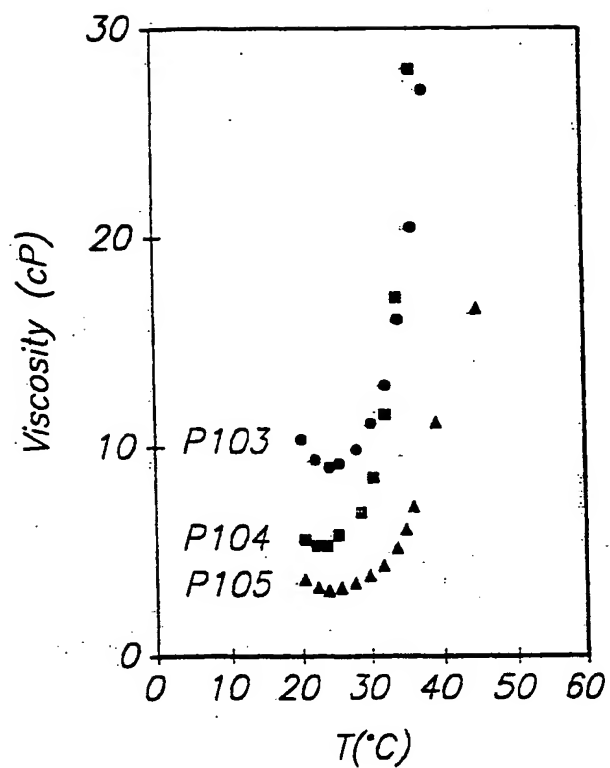


FIG. 16

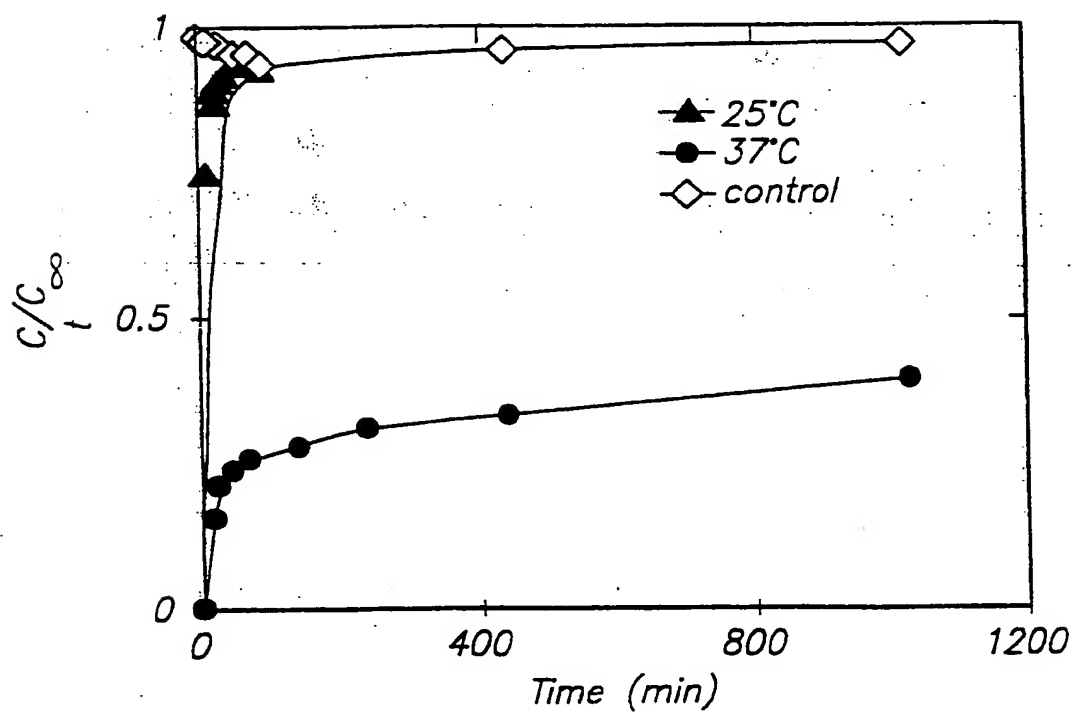


FIG. 17

10/34

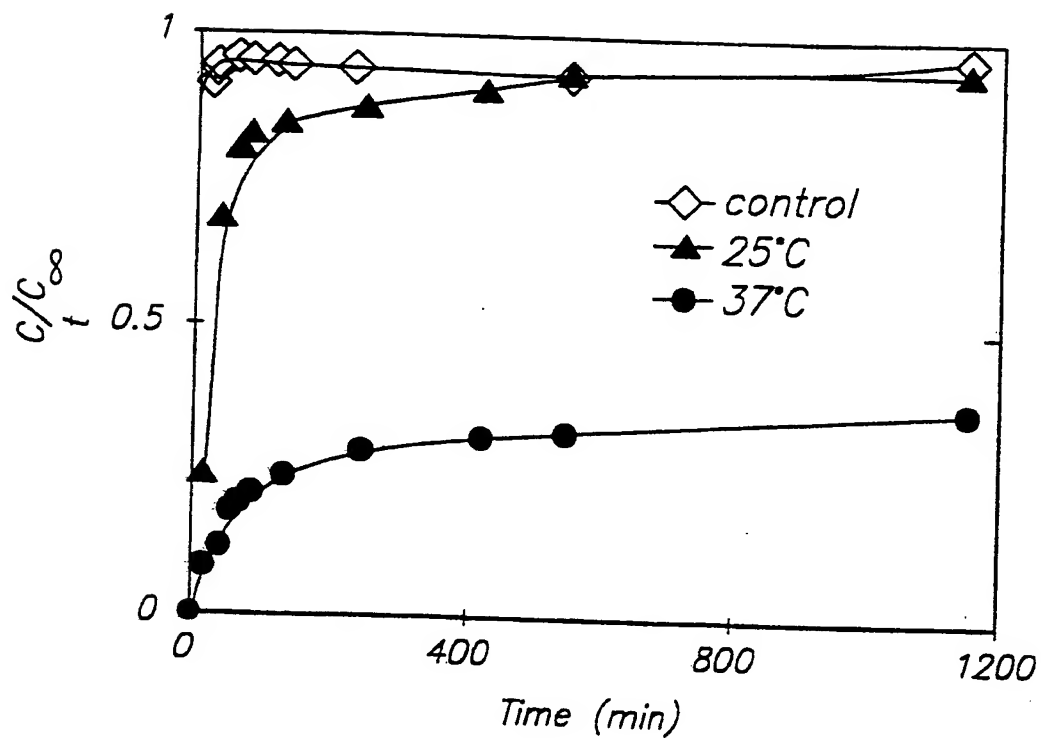


FIG. 18

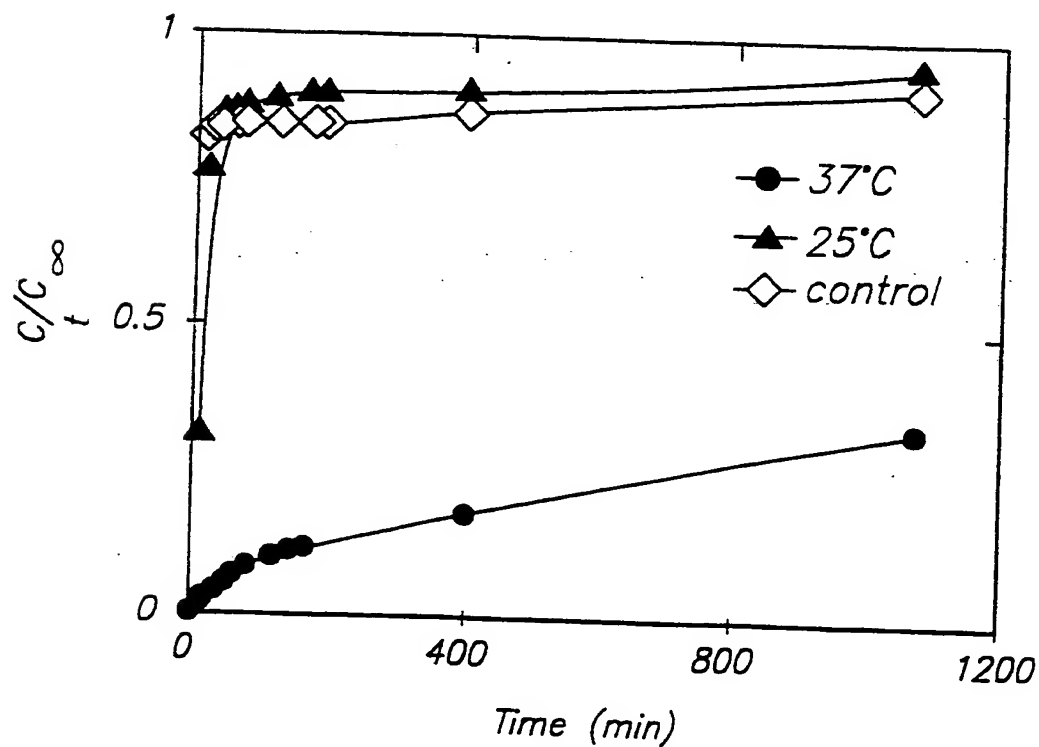


FIG. 19

11/34

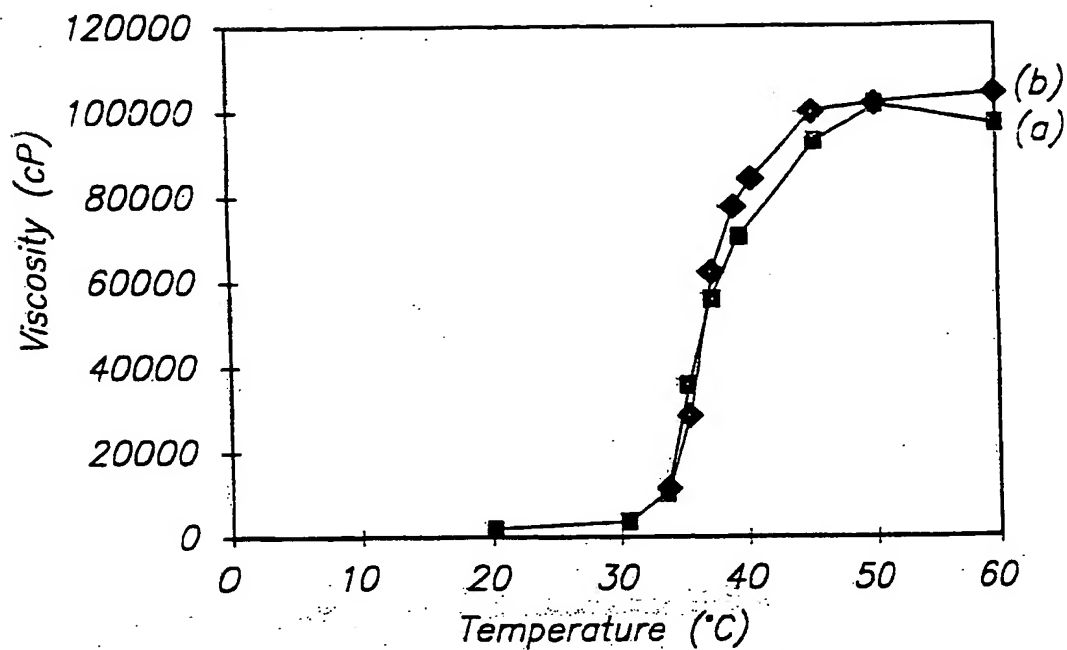


FIG. 20

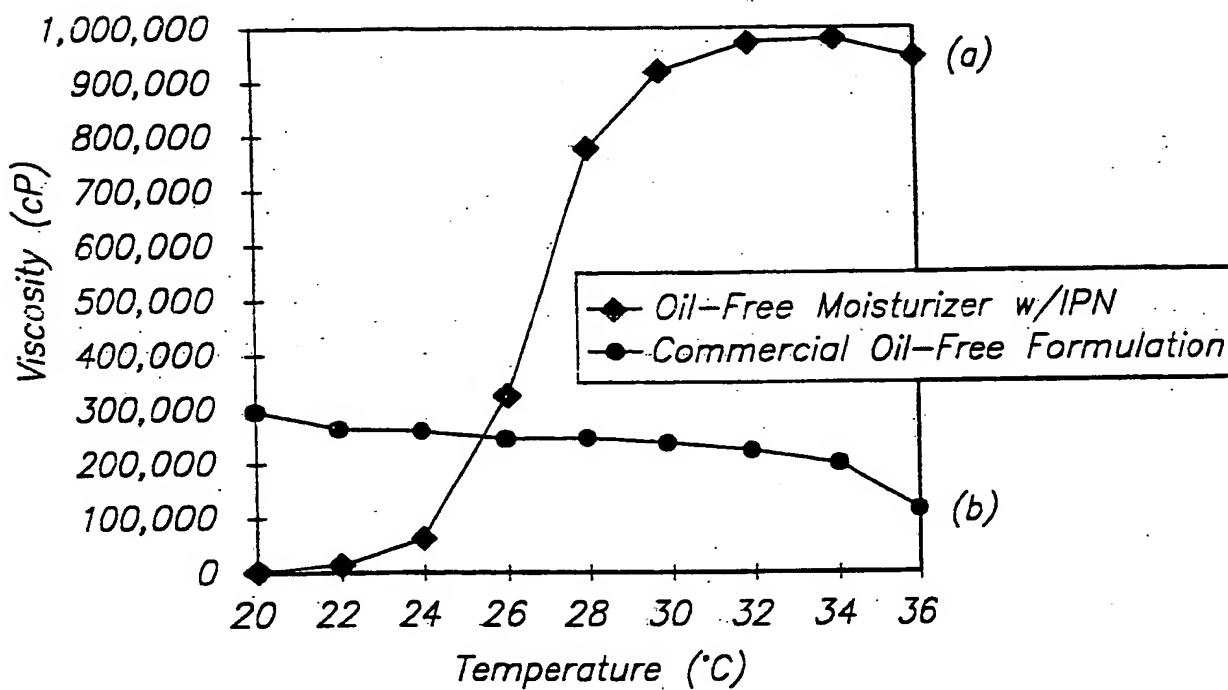


FIG. 21

12 / 34

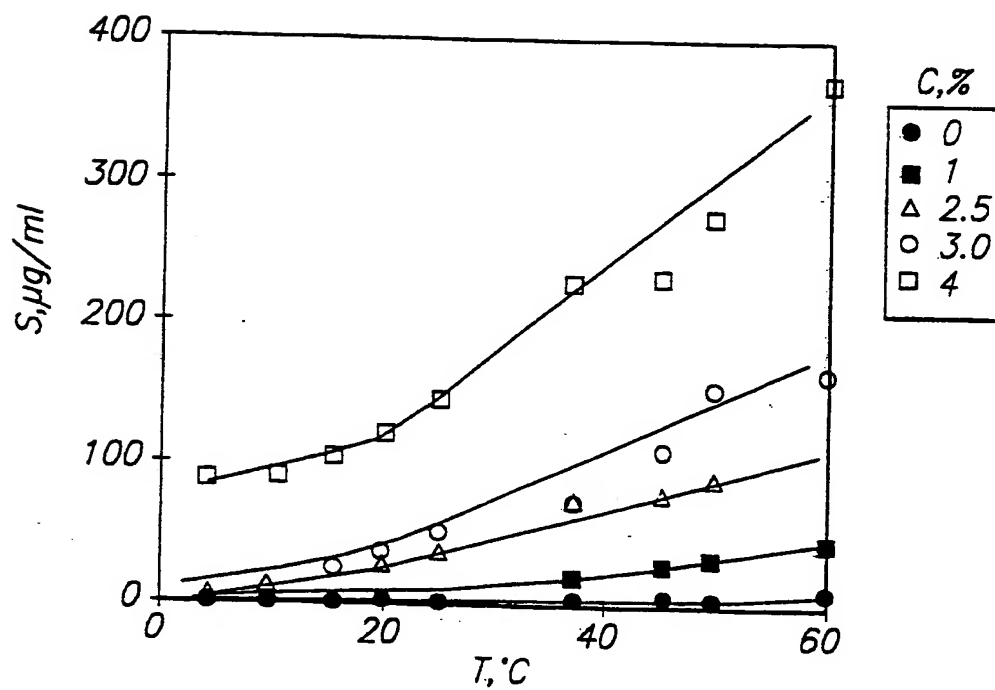


FIG. 22A

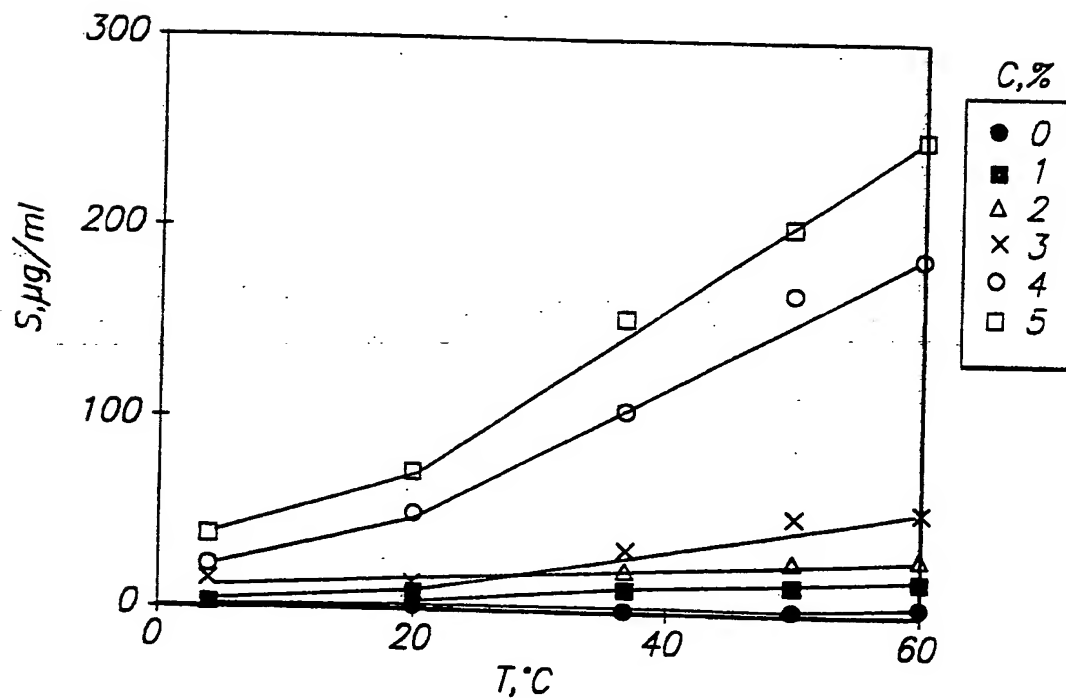


FIG. 22B

13 / 34

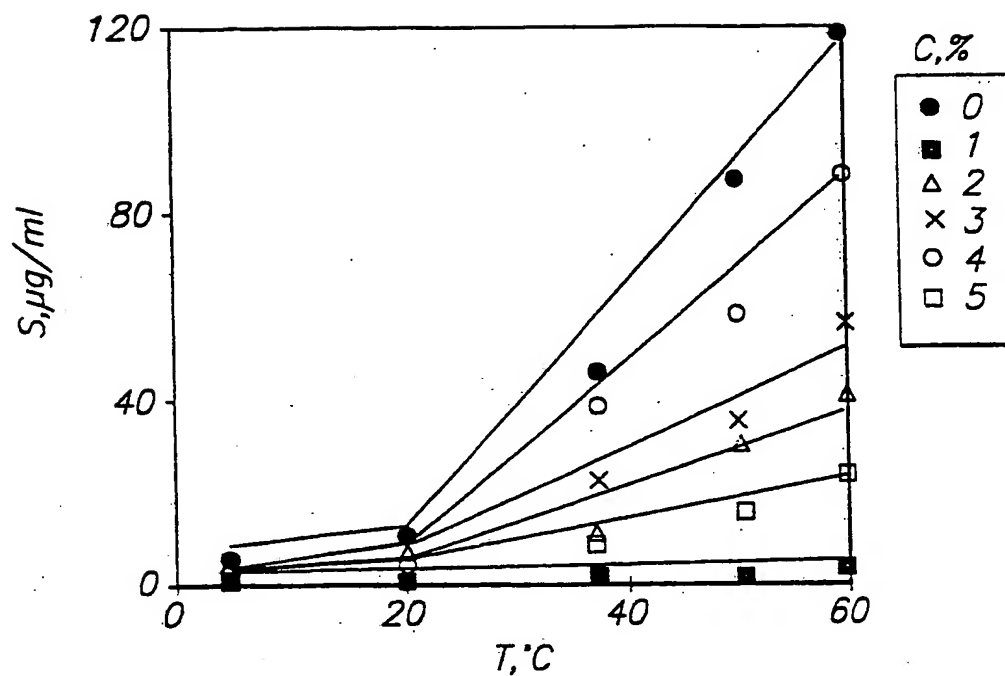


FIG. 22C

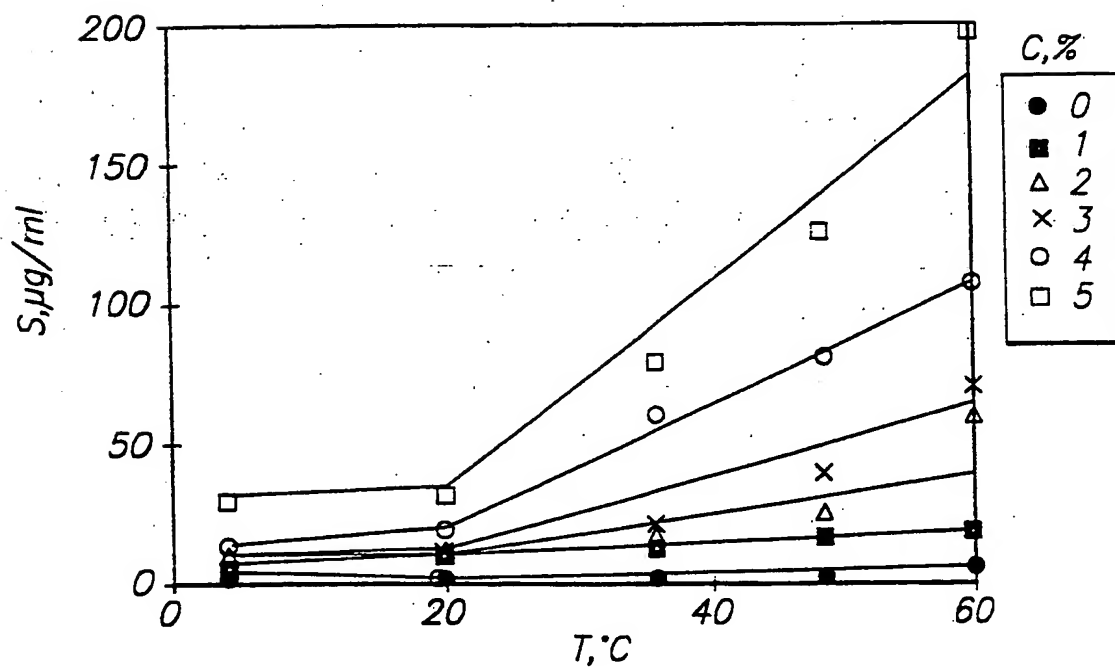


FIG. 22D

14/34

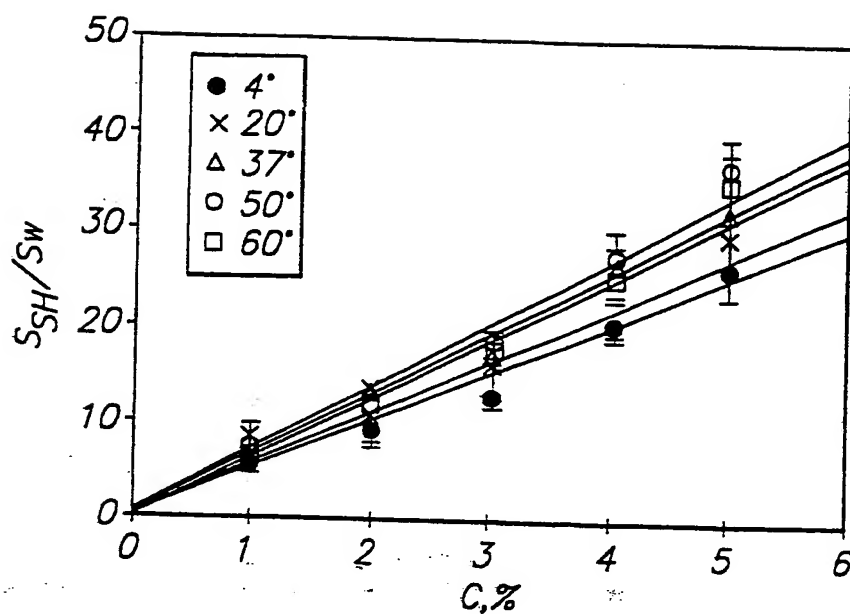


FIG. 23

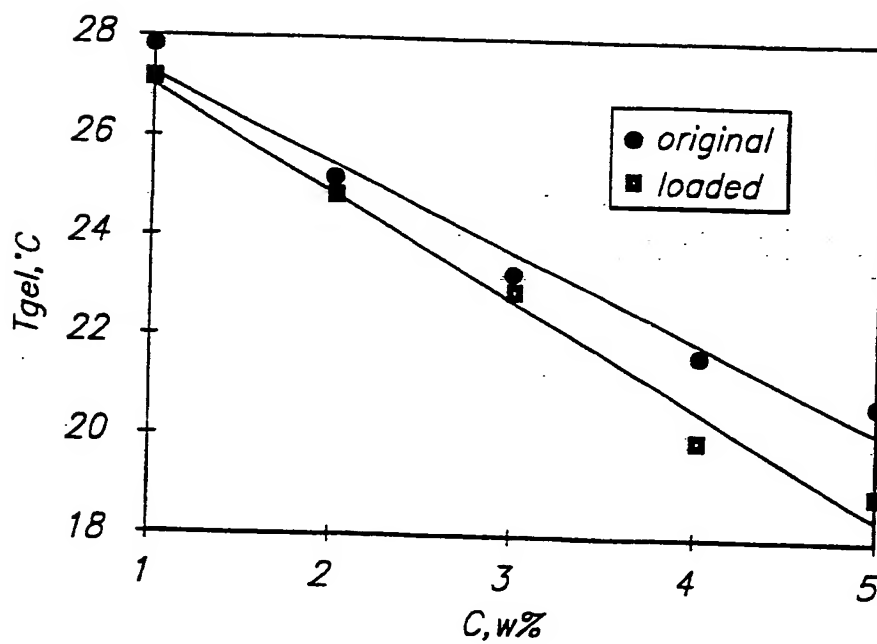


FIG. 24



15/34

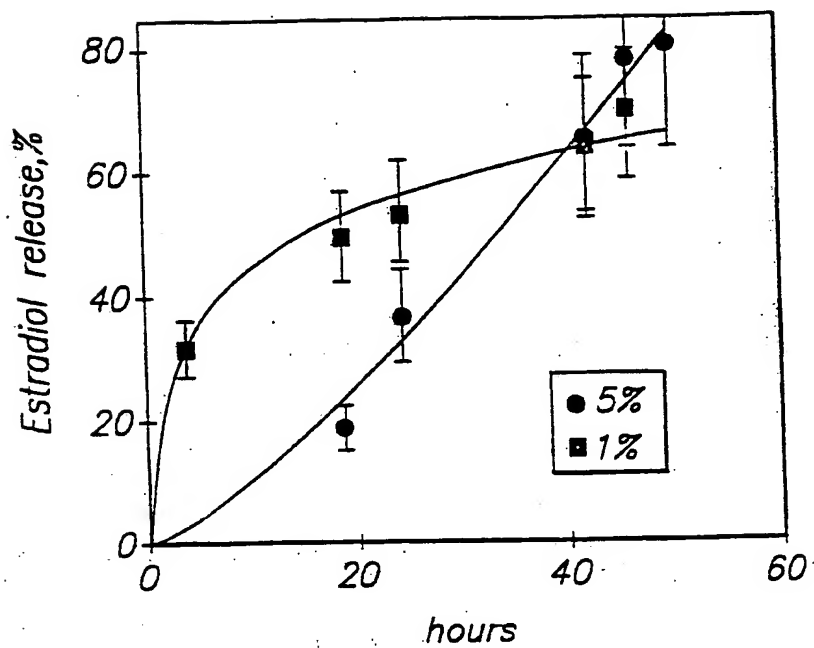


FIG. 25A

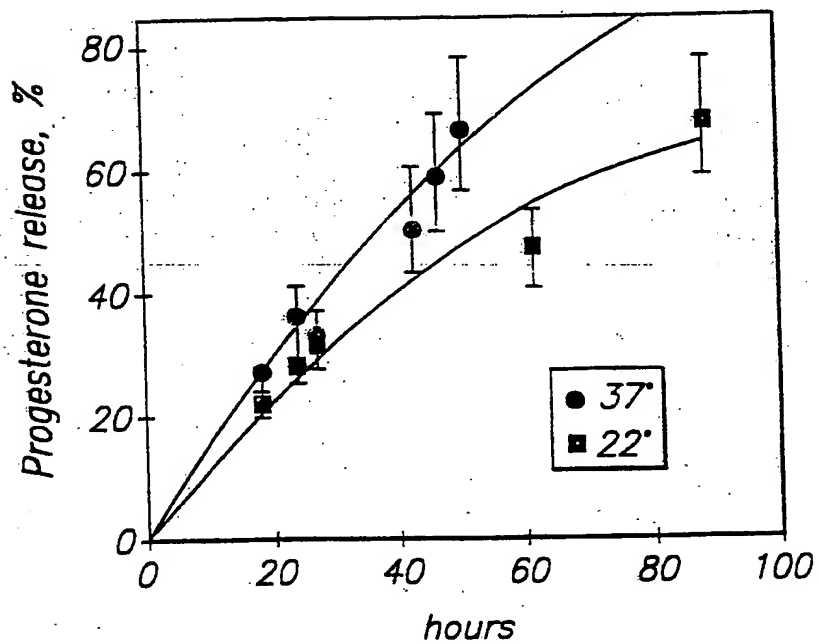


FIG. 25B

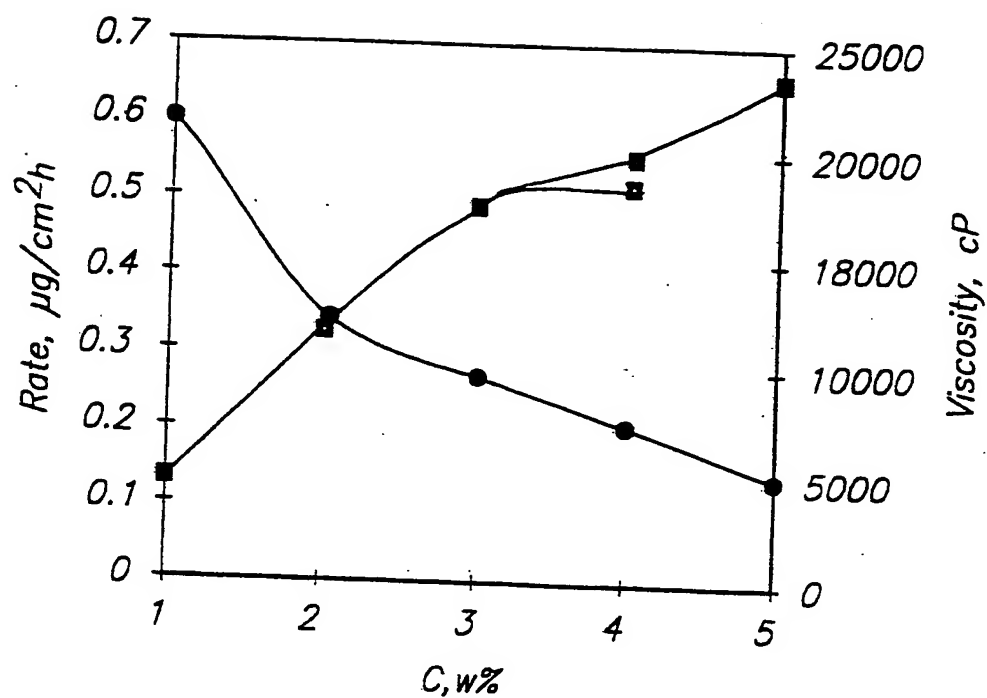


FIG. 26

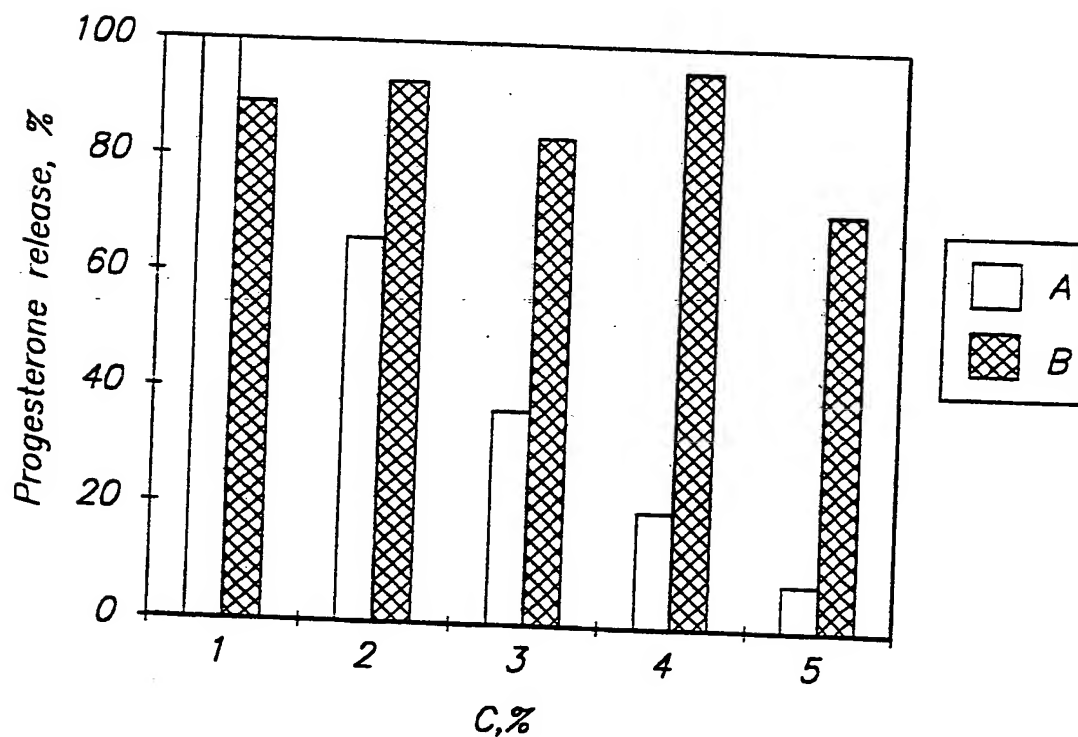
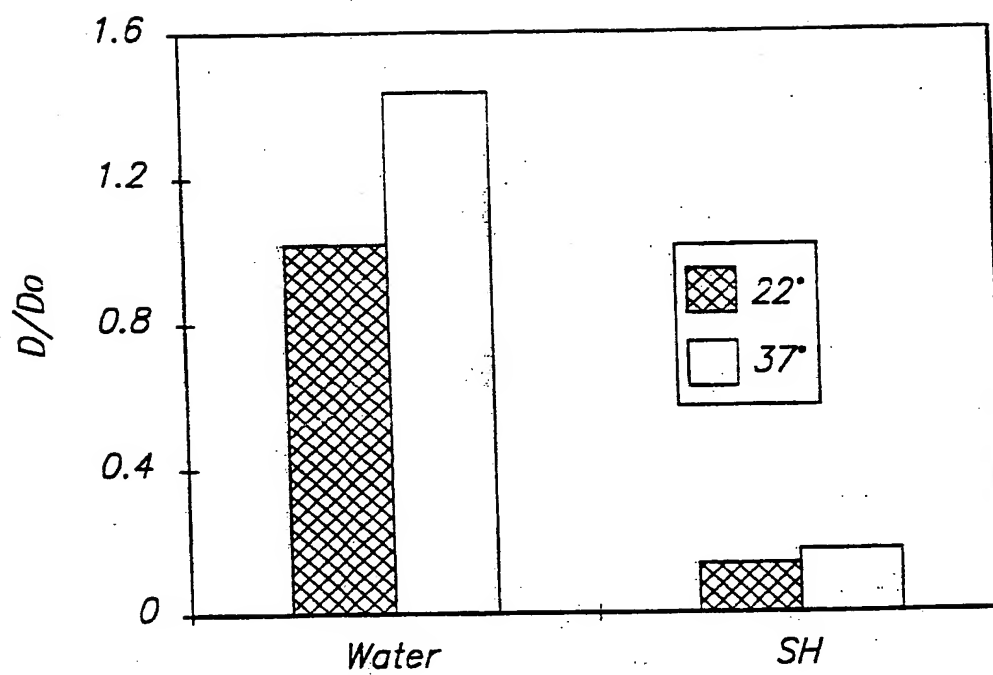


FIG. 27

17/34

**FIG. 28**

18/34

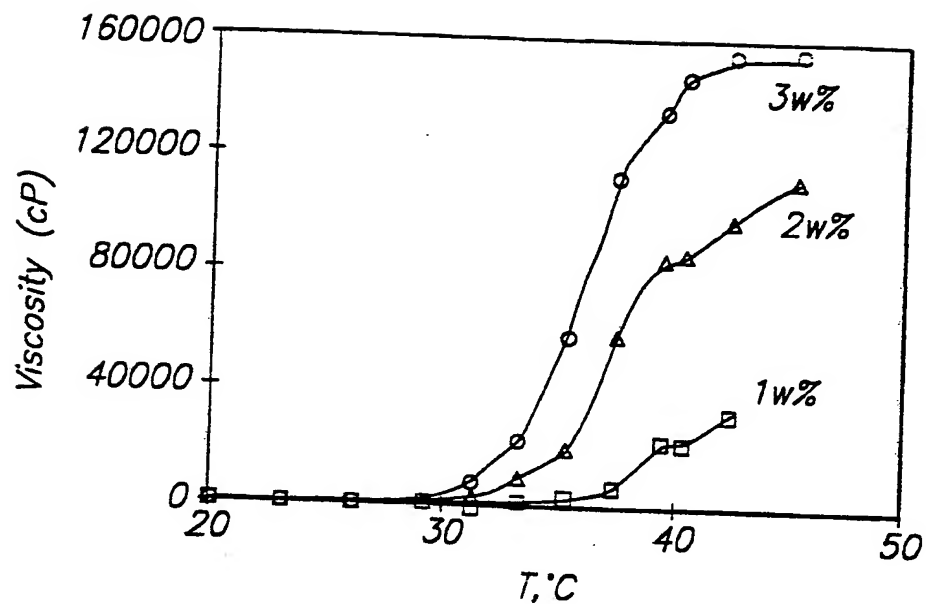


FIG. 1

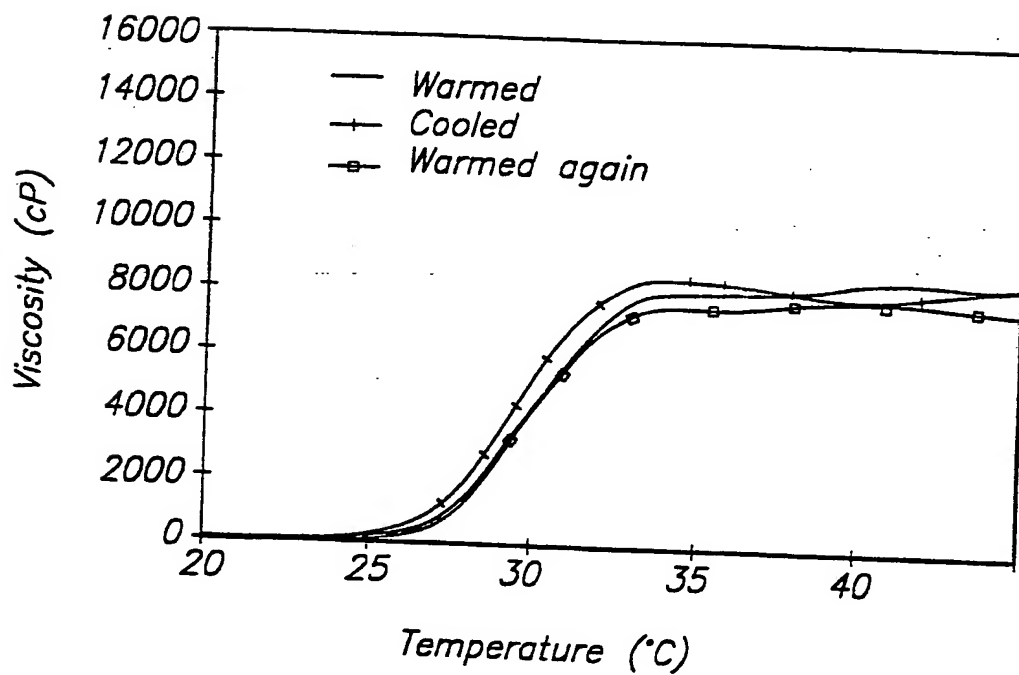


FIG. 2

19/34

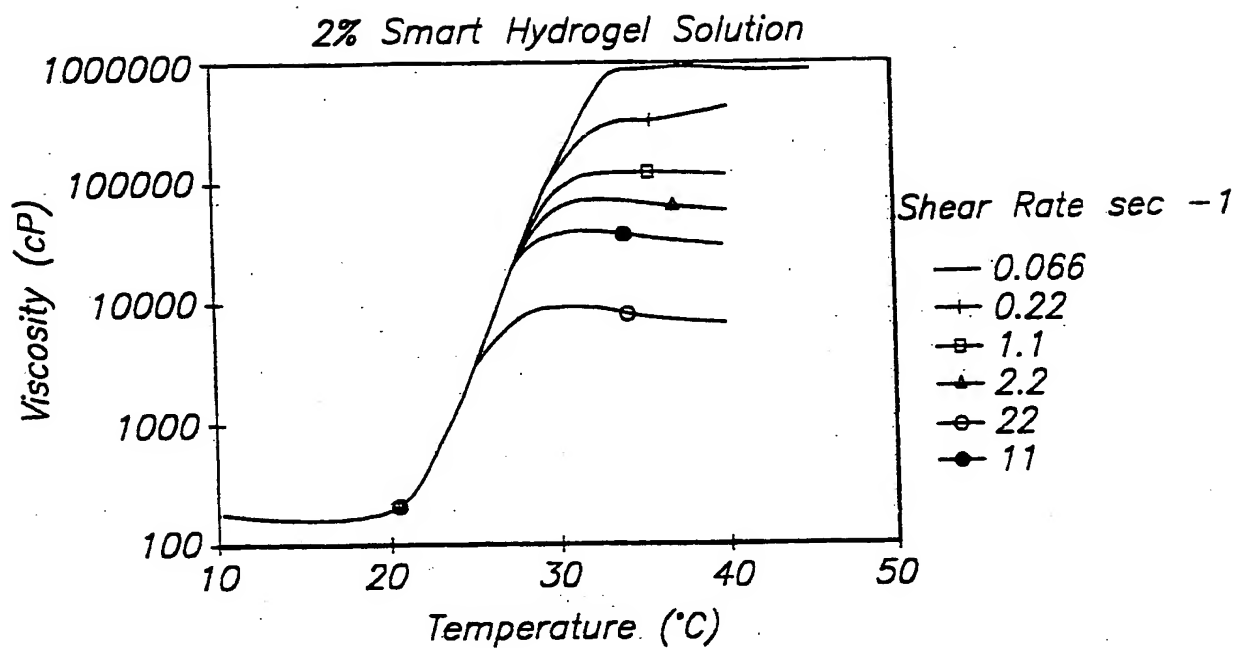


FIG. 3

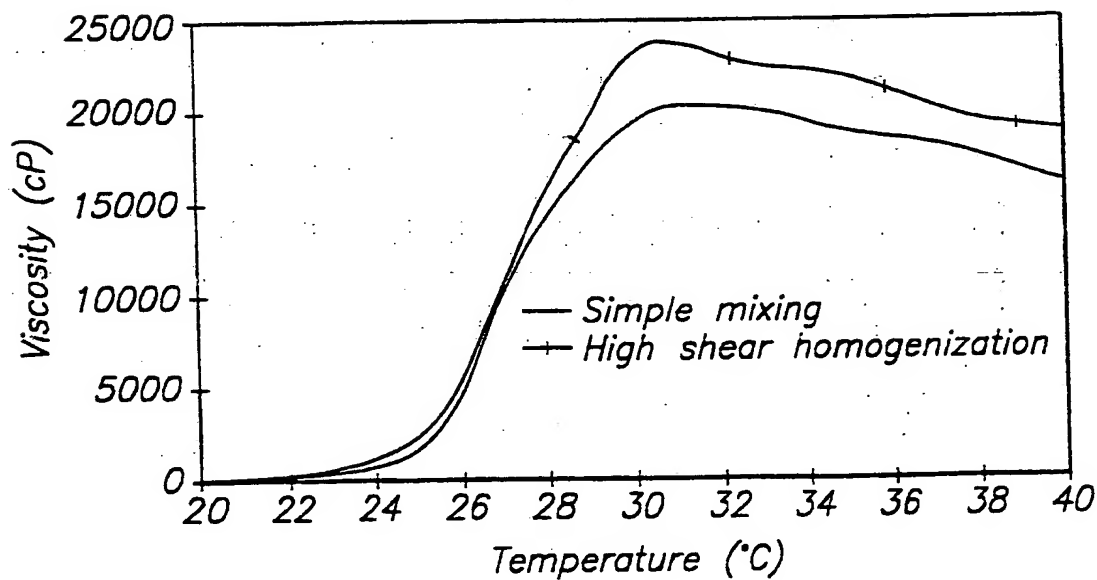


FIG. 4

20/34

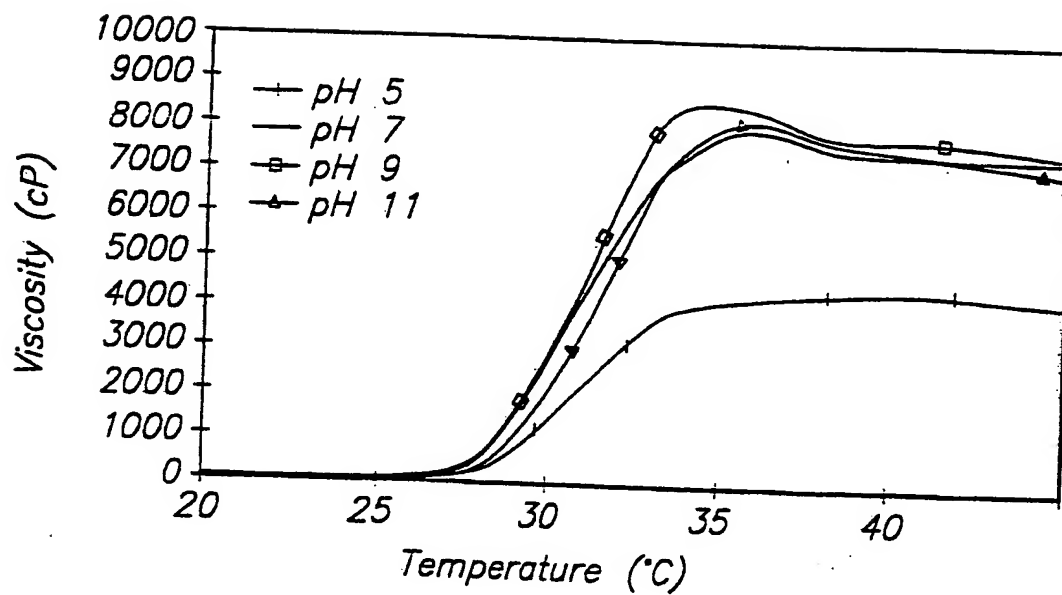


FIG. 5

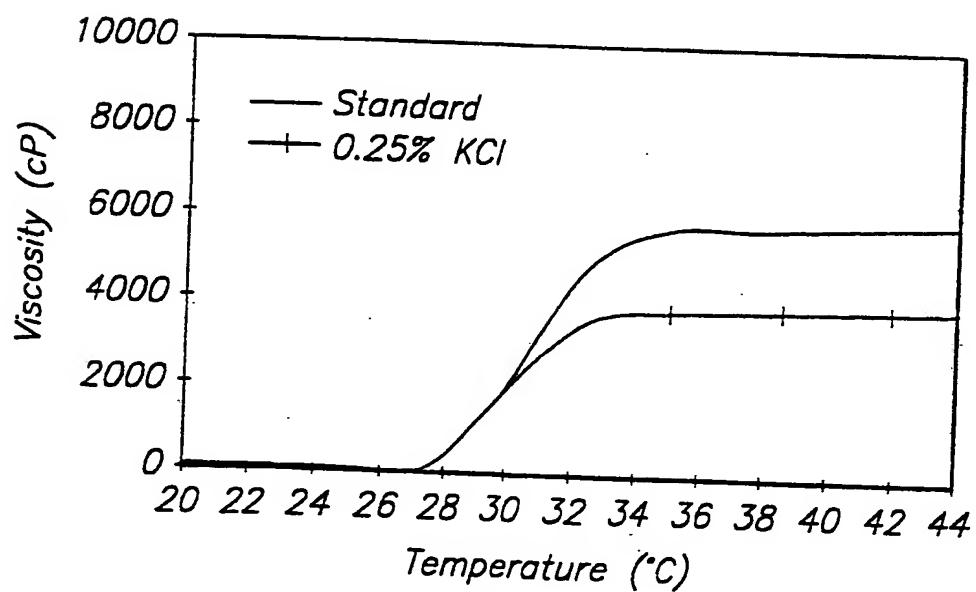


FIG. 6

21/34

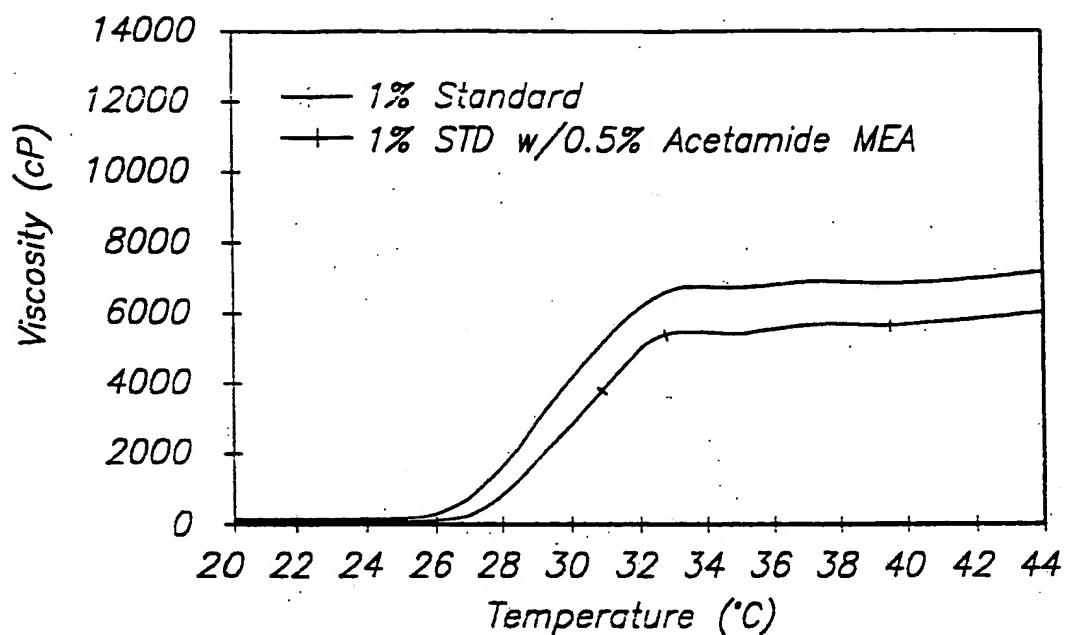


FIG. 7

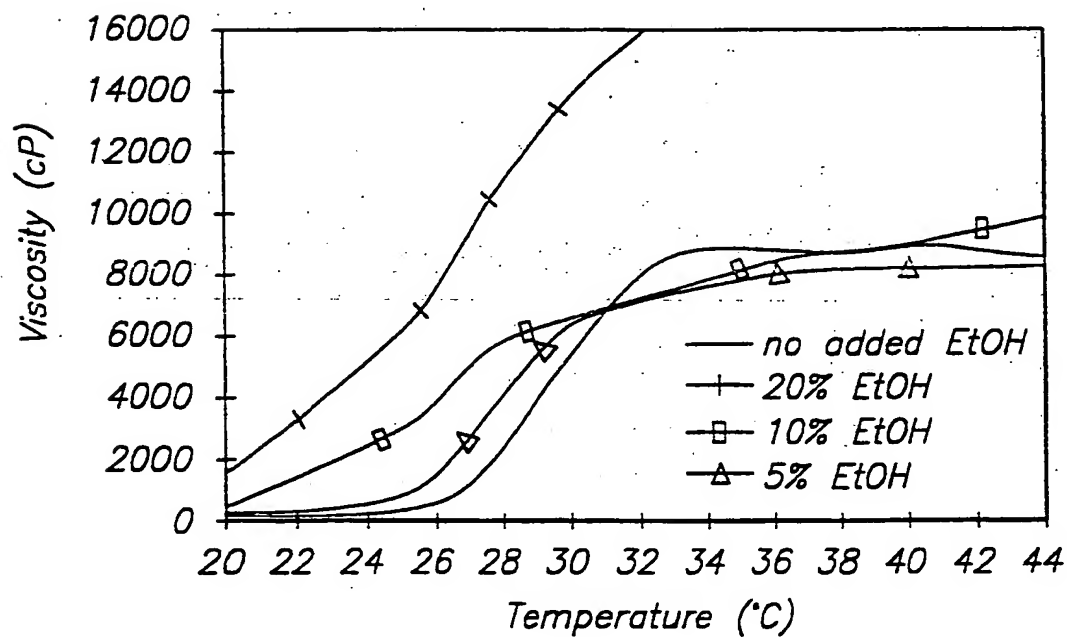
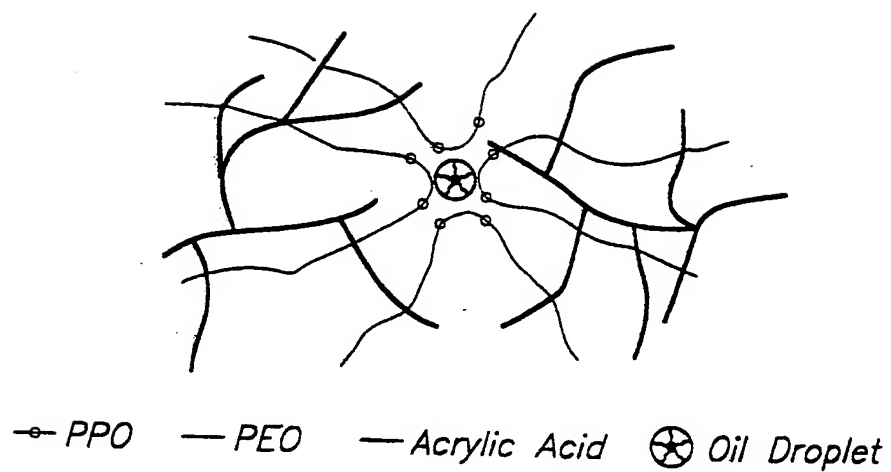
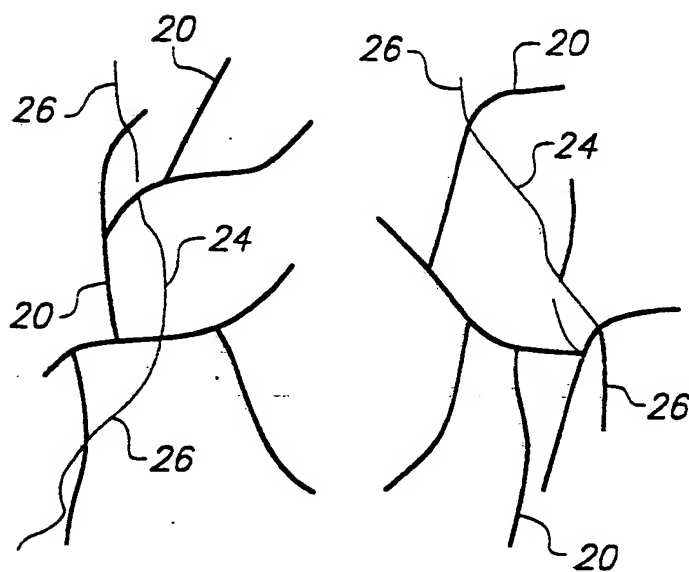


FIG. 8

22 / 34

**FIG. 9****FIG. 10A**



23/34

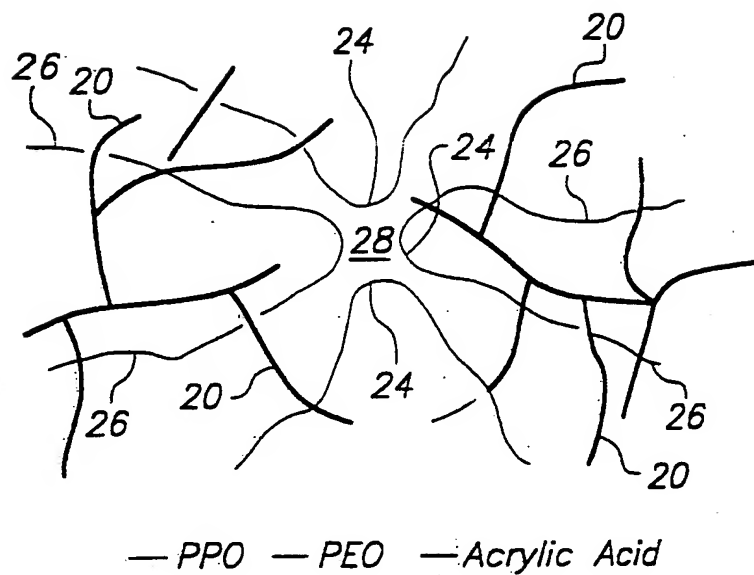


FIG. 10B

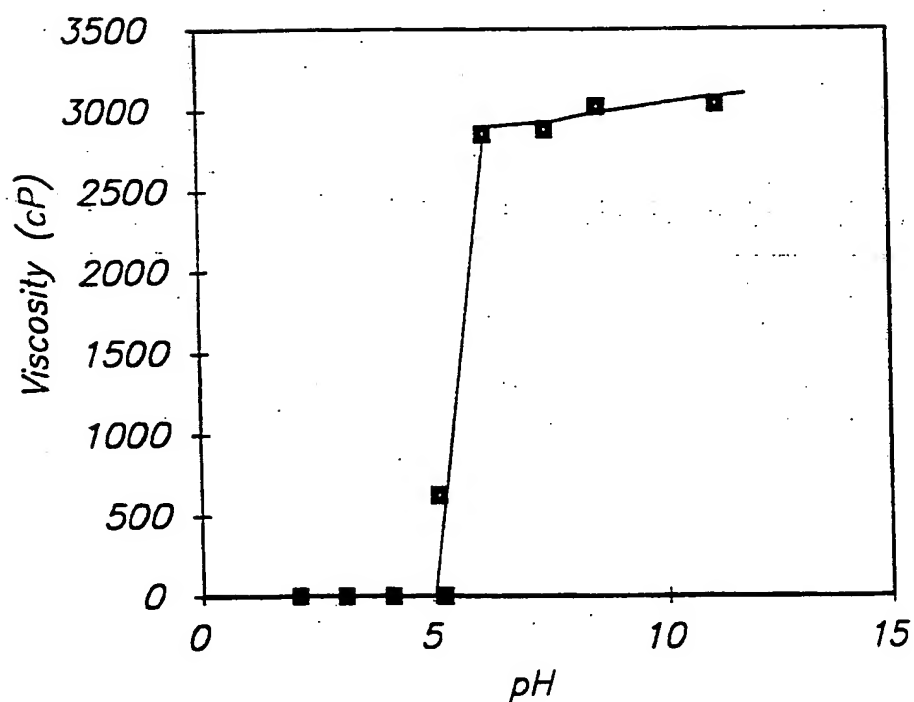


FIG. 11

24/34

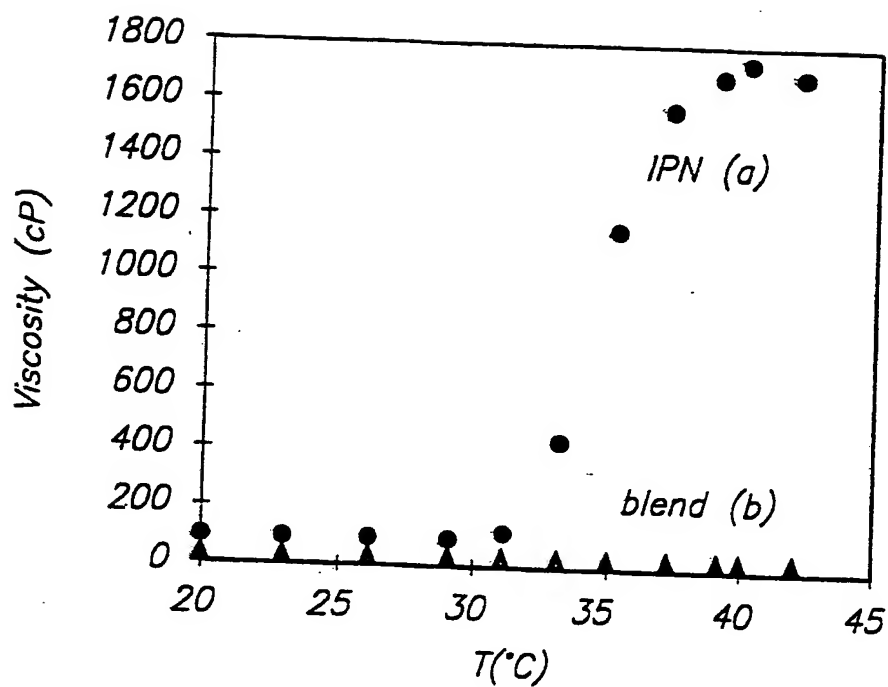


FIG. 12

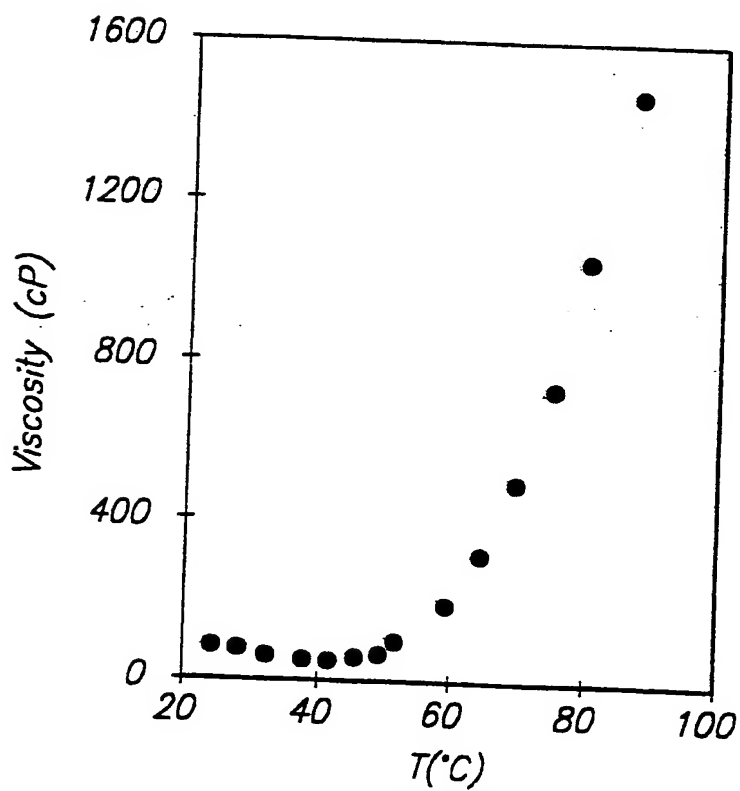
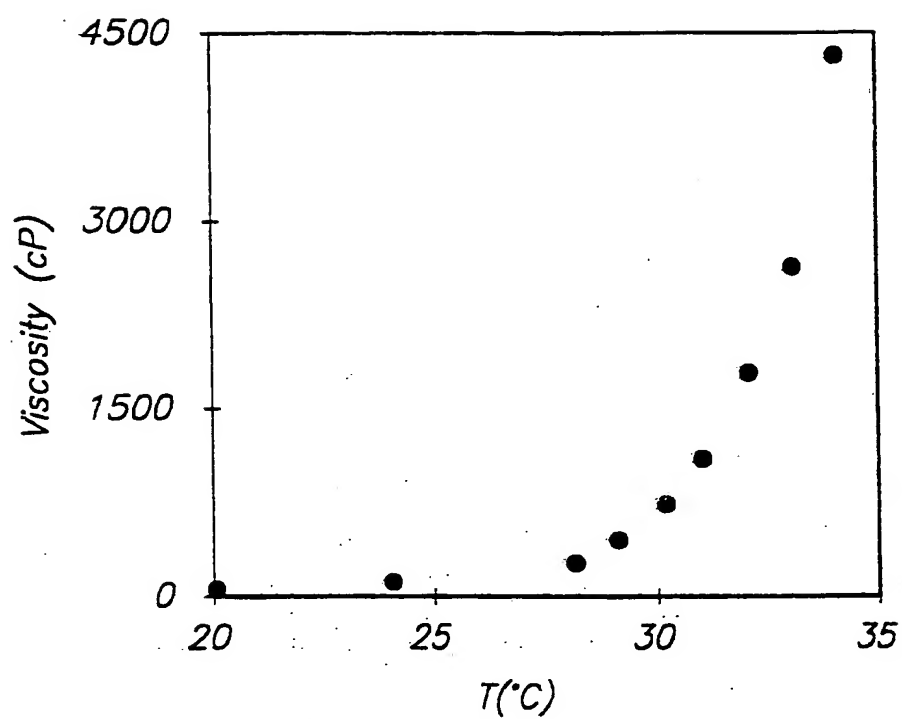
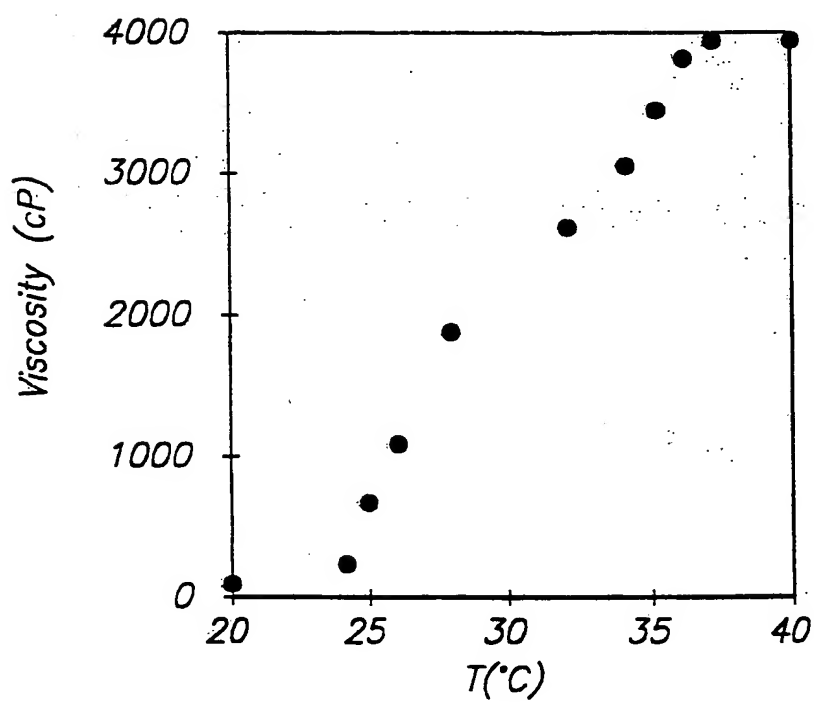


FIG. 13

25 / 34

**FIG. 14****FIG. 15**

26/34

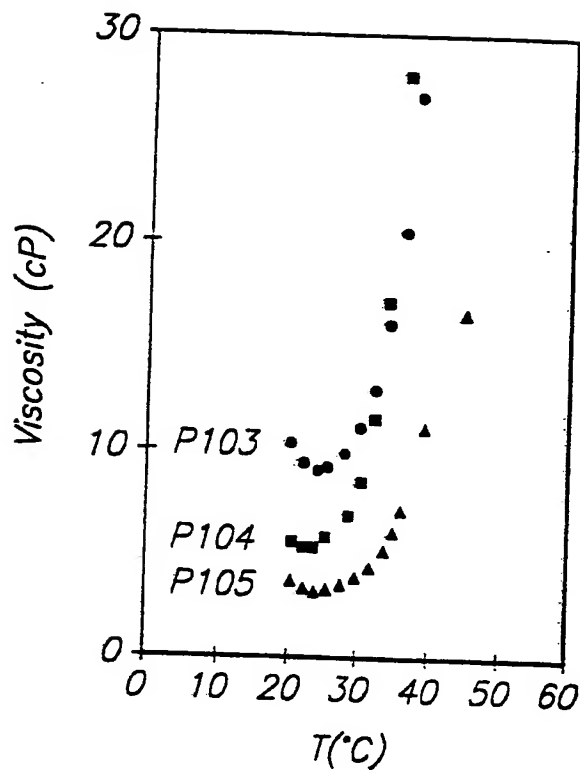


FIG. 16

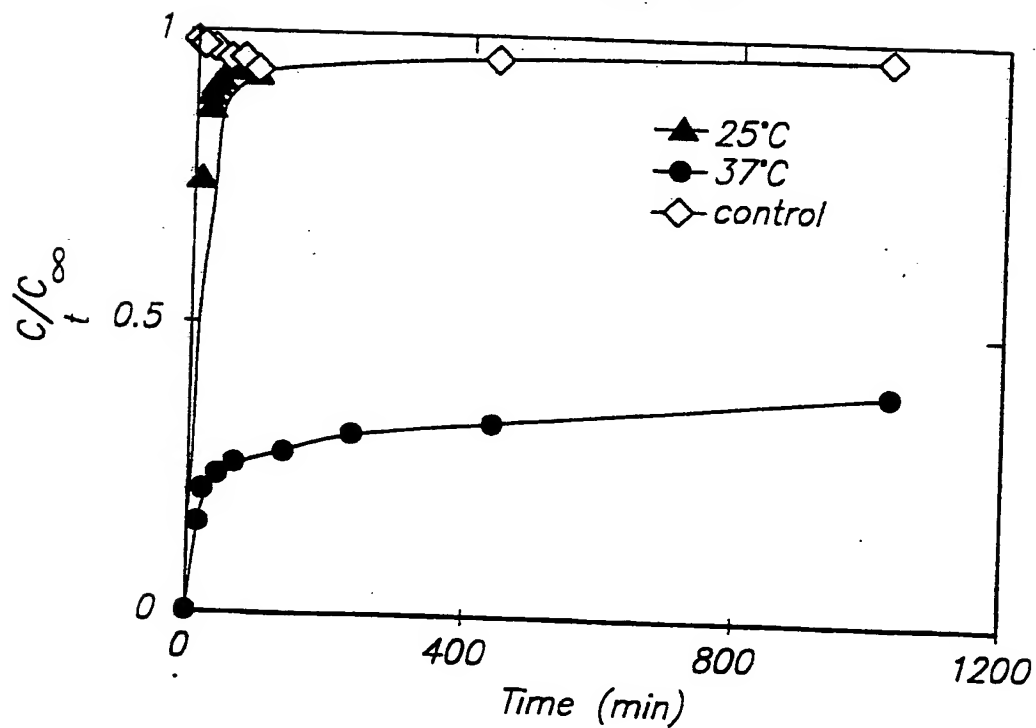


FIG. 17

27/34

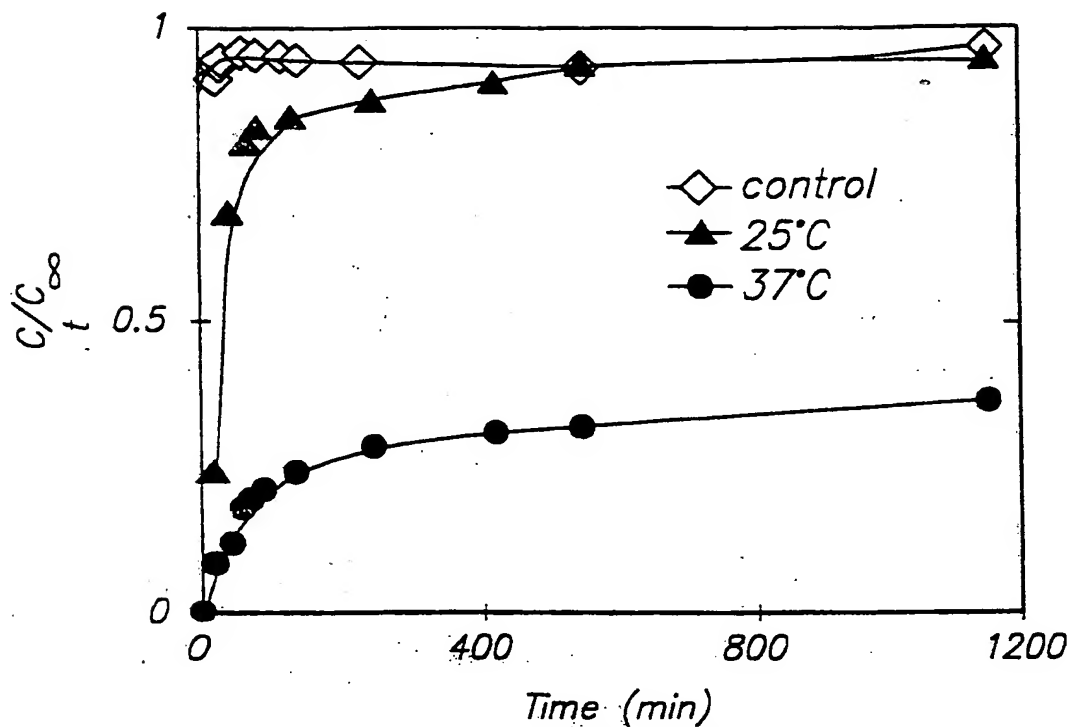


FIG. 18

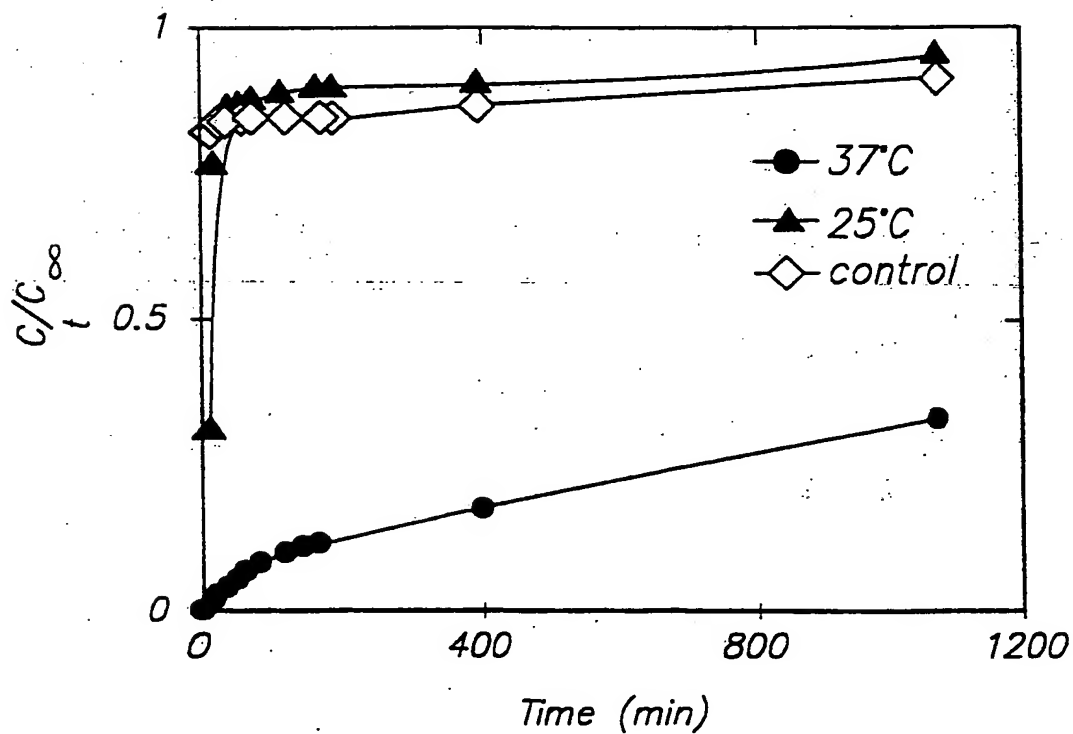


FIG. 19

28/34

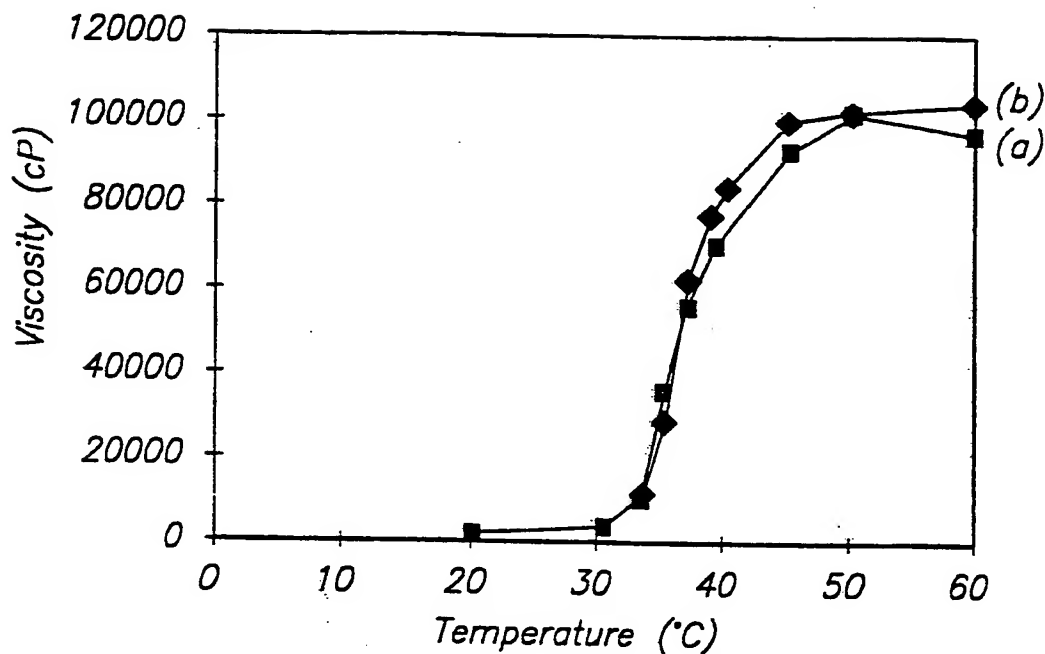


FIG. 20

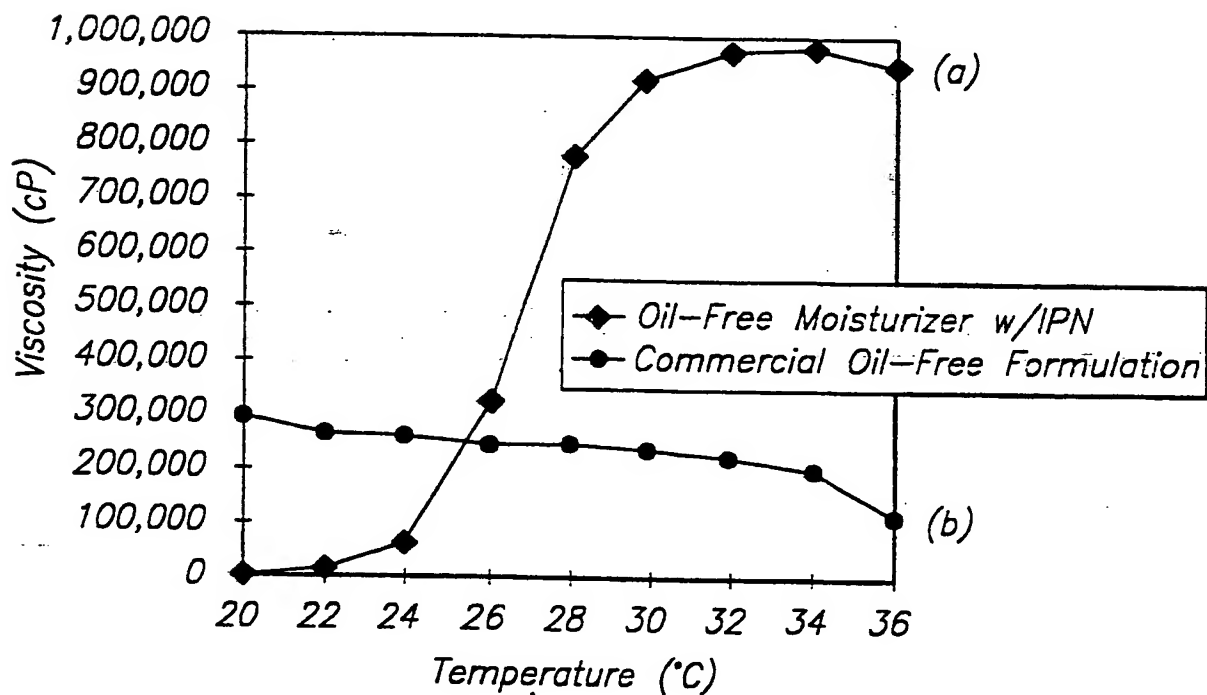


FIG. 21

29/34

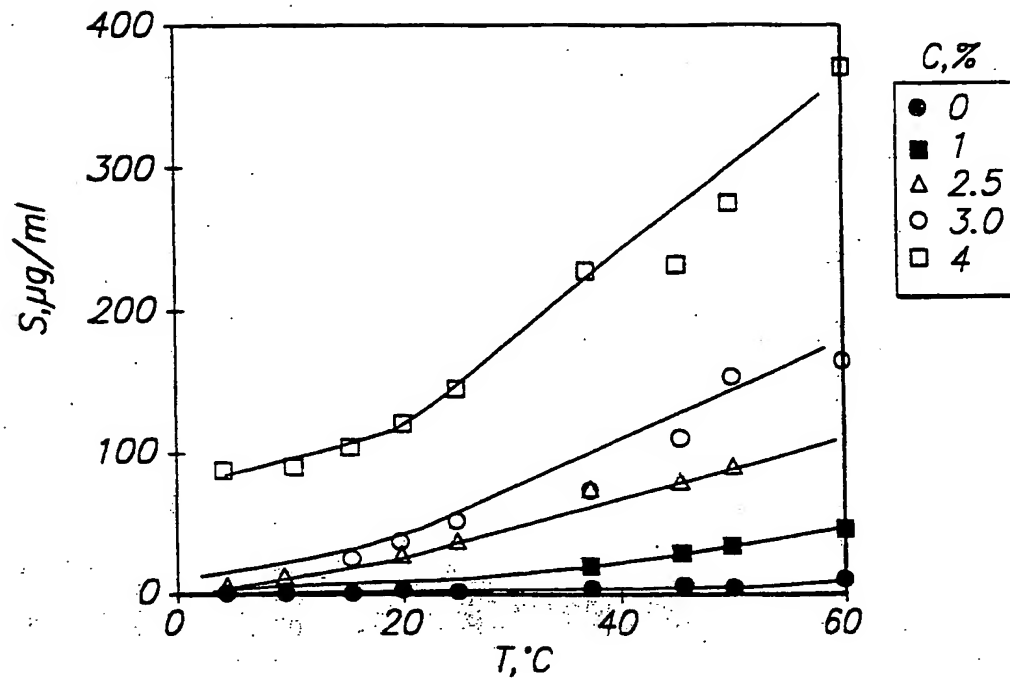


FIG. 22A

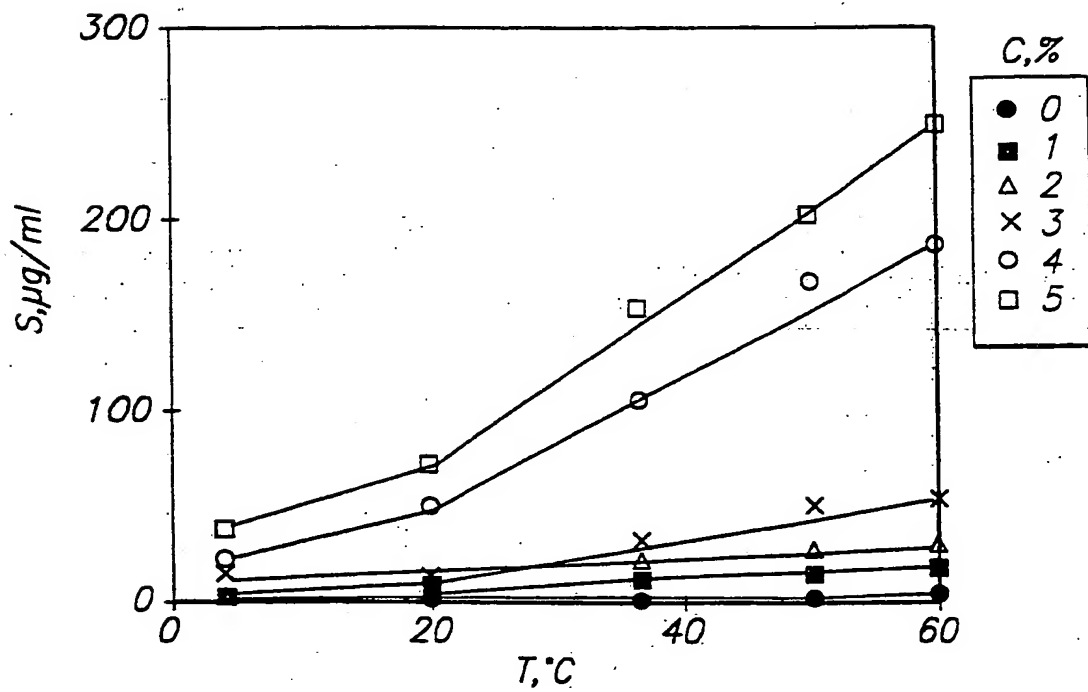


FIG. 22B

30 / 34

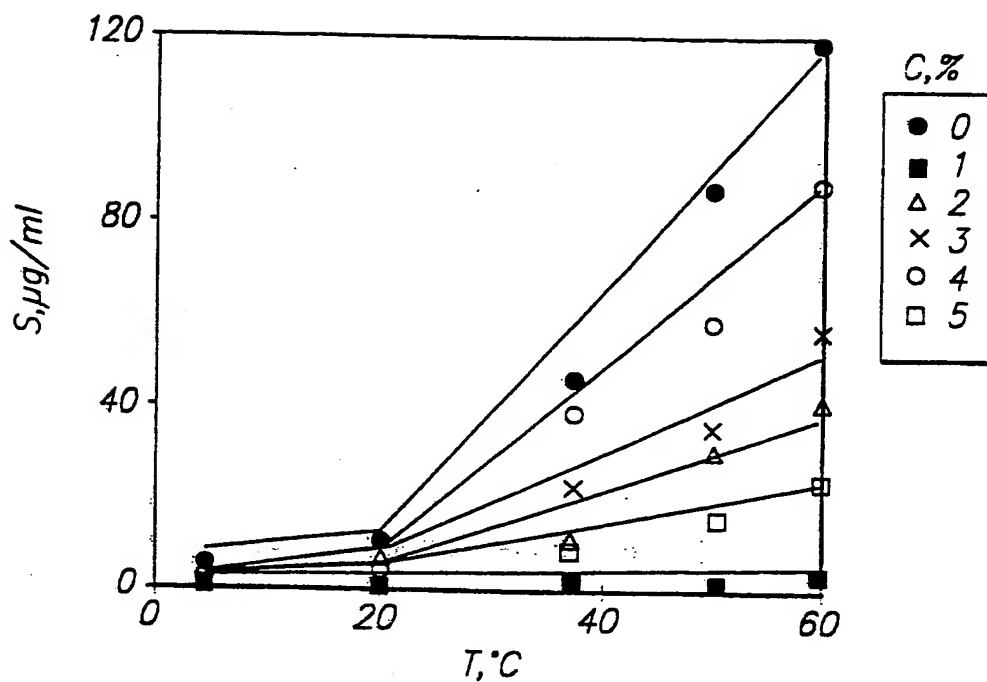


FIG. 22C

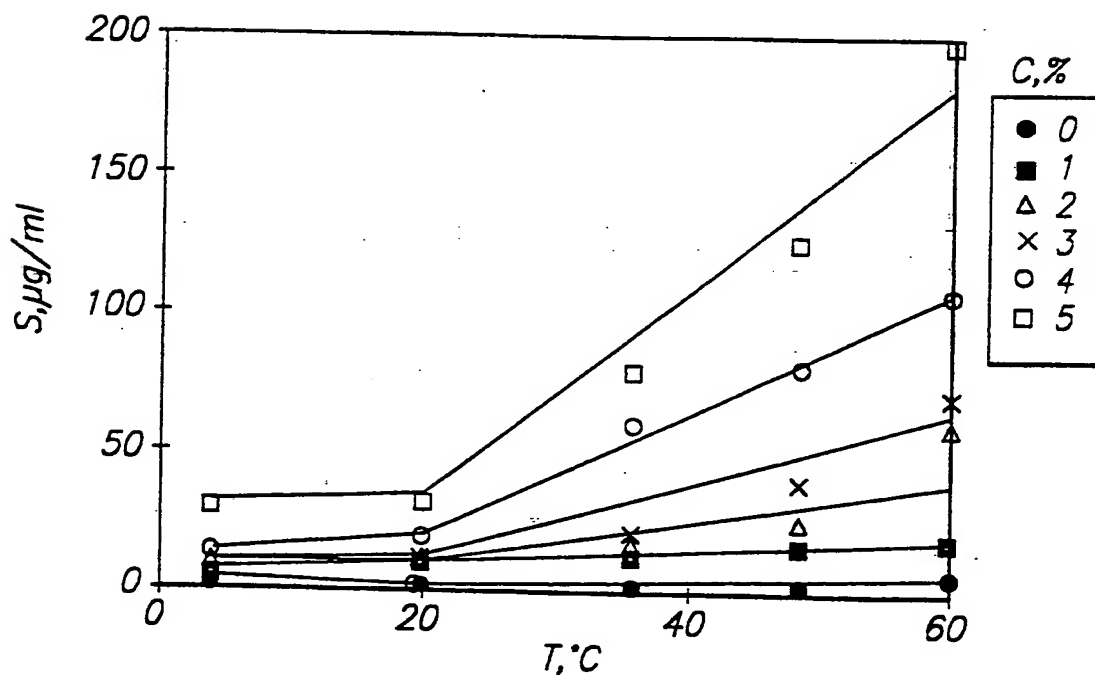


FIG. 22D



31/34

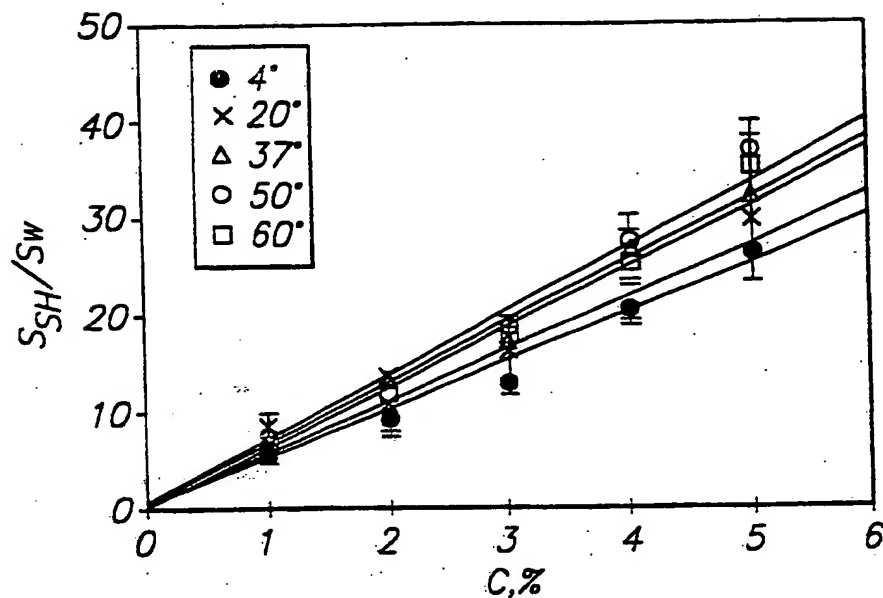


FIG. 23

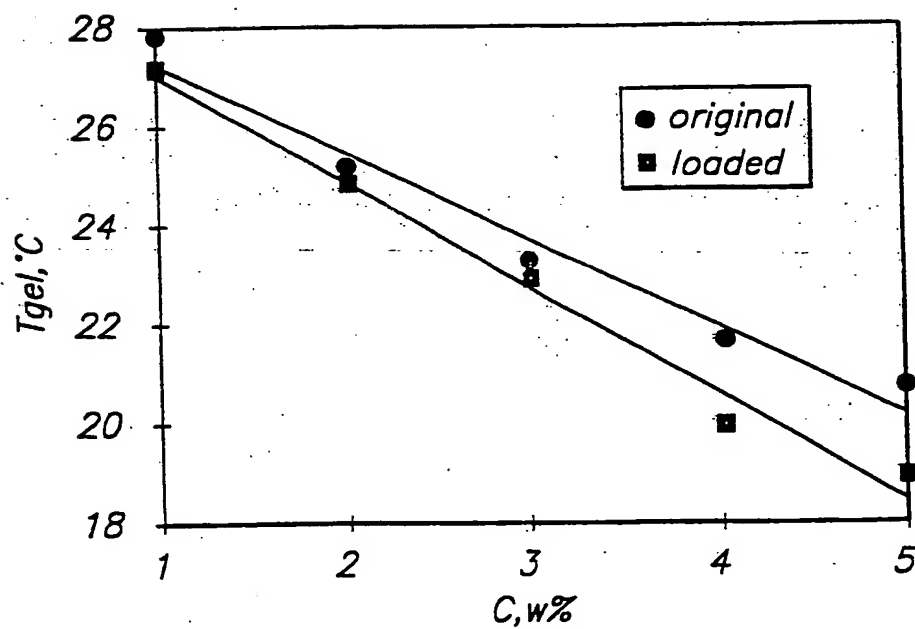


FIG. 24

32 / 34

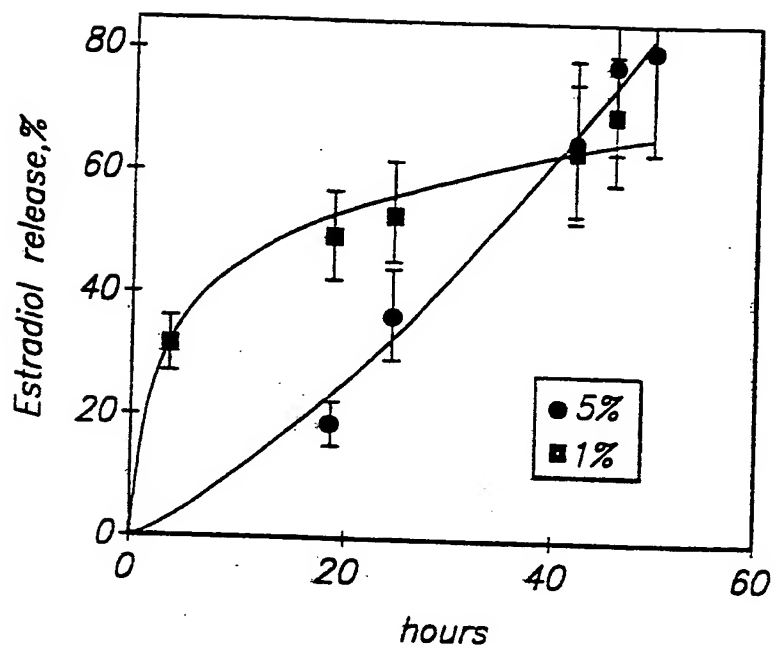


FIG. 25A

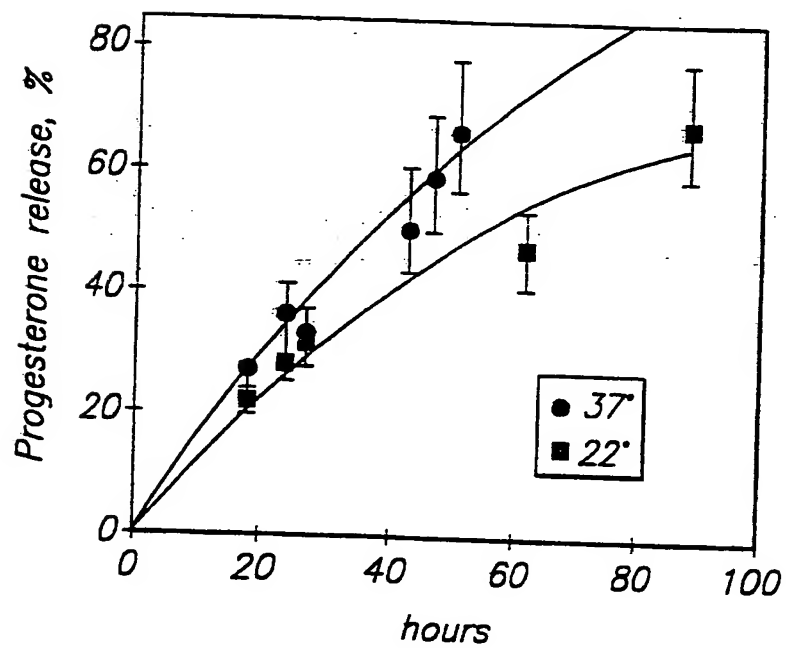


FIG. 25B

33 / 34

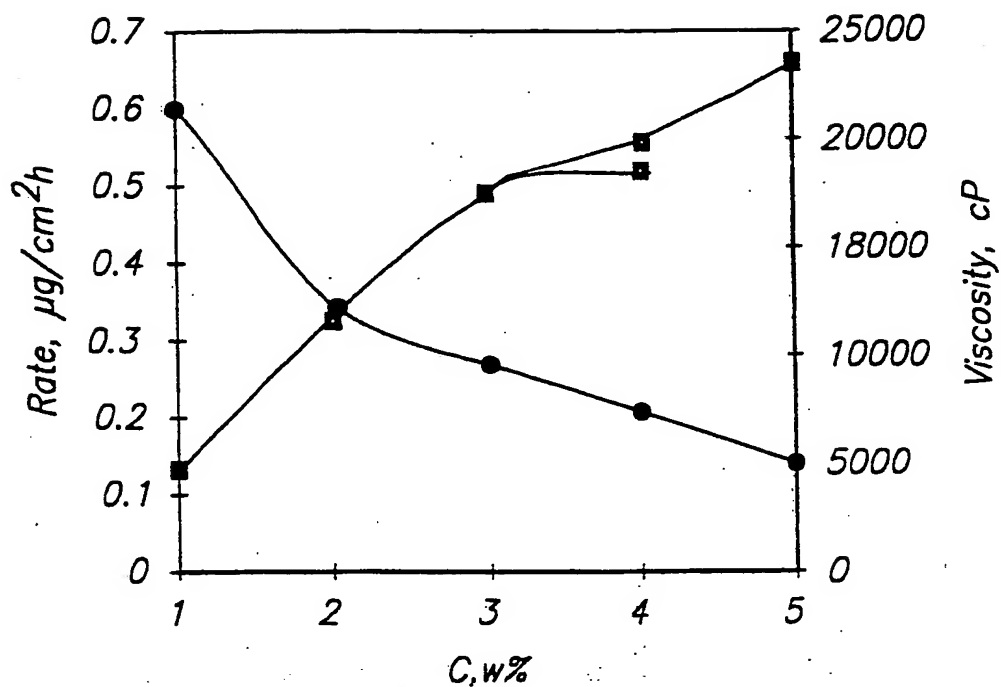


FIG. 26

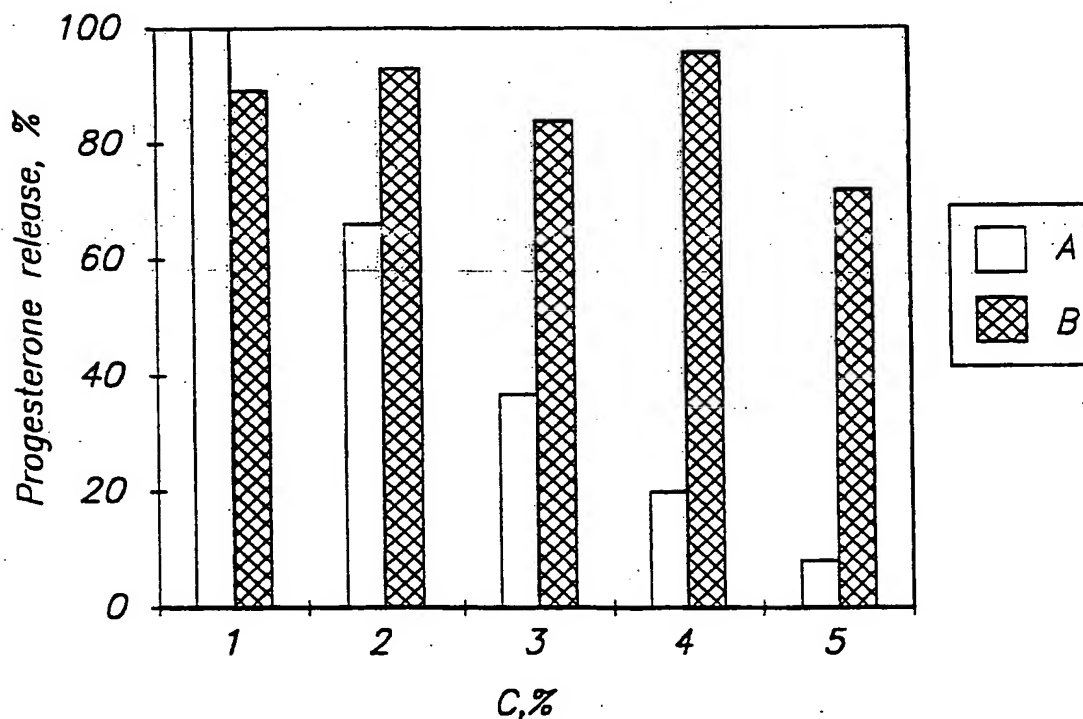
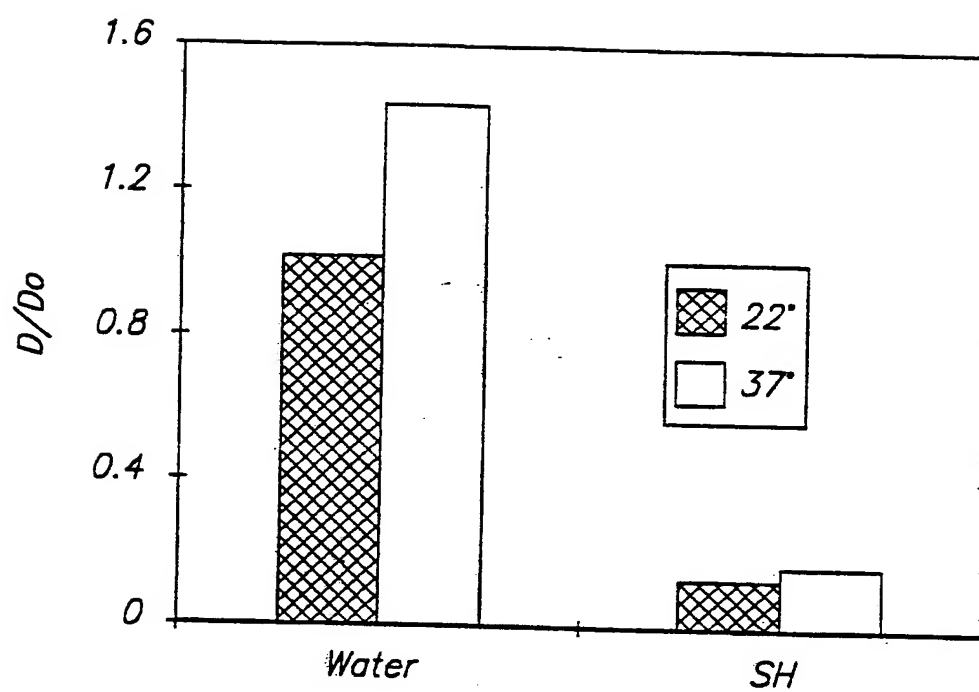


FIG. 27

34 / 34

**FIG. 28**

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/08931

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74  
US CL :Please See Extra Sheet  
According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
APS: COSMETIC, POLYACRYLIC ACID, POLYMER NETWORK, POLOXAMER

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 5,662,892 A (BOLICH, JR. et al.) 02 September 1997, see entire document.	1-38
Y	US 5,106,609 A (BOLICH, JR et al.) 21 April 1992, see entire document.	1-38

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* "A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O"	document referring to an oral disclosure, use, exhibition or other means	"A"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search  
03 AUGUST 1998

Date of mailing of the international search report  
02 OCT 1998

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231  
Facsimile No. (703) 305-3230

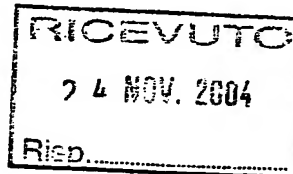
Authorized officer  
SHELLEY A. DODSON  
Telephone No. (703) 308-1235

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IS98/01931

A. CLASSIFICATION OF SUBJECT MATTER:

US CL : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 72.02, 70.08, 400, 401, 405



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